JUL 20 1934

MEDICAL LIBRARY

MEDICAL LIBRARY

This Issue Exceeds 85,000 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 103, No. 3 | 535 North Dearborn Street, CHICAGO, ILL. | JULY 21, 1934

CONTENTS AND SUBJECT INDEX

The Mortality from Heart Disease—A Challenge: Chairman's Address. Charles T. Stone, M.D., Galveston, Texas 151

The Intracutaneous Quantitative Tuberculin Test in the Diagnosis of Active Tuberculosis. David Ayman, M.D., Boston.....154

Heart Disease Among Adolescent School Children. Morris Goodman, M.D., and Josephine W. Prescott, M.A., New York.....157

Agranulocytic Leukopenia: Report of a Case Successfully Treated with X-Rays; Effect of Amidopyrine. Julien E. Benjamin, M.D., and Joseph B. Biederman, M.D., Cincinnati 161

Necrobiosis Lipoidica Diabeticorum (Urbach): Dermatitis Atrophicans Lipoides Diabetica (Oppenheim). H. E. Michelson, M.D., and C. W. Laymon, M.D., Minneapolis....163

Electrosurgical Obliteration of the Gallbladder. Max Thorek, M.D., Chicago 169

Suprapubic Prostatectomy with Immediate Closure of Bladder. H. H. Haynes, M.D., Clarksburg, W. Va.....174

Skin Sensitiveness to Tuberculin in Primary Tuberculosis: Is Its Degree in Children Related to the Extent of Demonstrable Intrathoracic Pathologic Changes Present? Chester A. Stewart, M.D., Minneapolis 176

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

The Heredity of a Congenital White Spotting in Negroes. Clyde E. Keeler, Sc.D., Boston.....179

Dermatitis of the Eyelids. Herbert Rattner, M.D., Chicago.....180

Excretory Urography After Subcutaneous Injection of Neoskiodan. Edwin Beer, M.D., and Frederick H. Theodore, M.D., New York.181

Cecal Polyp on Occluded Base of Appendix. Abraham Strauss, M.D., Cleveland 182

THERAPEUTICS

The Therapy of the Cook County Hospital: Therapy of Erysipelas. Edited by Bernard Fantus, M.D., Chicago 183

COUNCIL ON PHYSICAL THERAPY

Sources of Ultraviolet and Infra-Red Radiation Used In Therapy: Physical Characteristics. W. W. Coblentz, Ph.D., Washington..183

COMMITTEE ON FOODS 189

EDITORIALS

Rational Dietary Advice.....190

Sterols in Milk.....190

Experimental Elephantiasis.....191

CURRENT COMMENT

Sudden Death After Injection of Human Serum.....192

Regeneration of Hemoglobin....192

(Subject Index on next page)

ASSOCIATION NEWS 193

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Sec. 1103, Act of Oct. 3, 1917, authorized on June 14, 1918.

Copyright, 1934, by the American Medical Association. NEXT ANNUAL SESSION, ATLANTIC CITY, N. J., JUNE 10-14, 1935

A NEW SUCCESS!

CURTIS' GREAT "OBSTETRICS and GYNECOLOGY"

ALREADY BEING REPRINTED

The reception given this fine new three-volume work by the family doctor, the surgeon, the specialist, from Canada to the Rio Grande and from Coast to Coast, has been far greater than even we expected—*and we expected much!* Notwithstanding the large initial print, our presses are already clicking off at top speed *a second large printing* to meet sustained, yes, *increased* demand.

And no wonder! 80 of this country's leading *practicing specialists* have written this work on diseases of the life-cycle of woman—a field that constitutes at least *50 per cent of general practice.* Moreover, these authors have written the entire work with a full and constant appreciation of just what is needed on these subjects. Here you will find stressed the *common, everyday, run-of-practice diseases*—and when we say "stressed" we mean just that—full and complete consideration of *every detail* necessary for correct and quick diagnosis and for effective treatment. The clear and definite text is further amplified by *2150 illustrations on 1674 figures,* many in colors—without doubt the most instructively illustrated work on these subjects to be found in the English language.

But don't take our word for it. *Turn now to Page 3* and read there the unstinted praise and recommendation given this work—and our "Easy Payment Plan" for placing it *immediately* in your library.

Turn to Page 3—SAUNDERS ADVERTISEMENT

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "MI," Medicolegal; "ME," Medical Economics.

Accidents, road, payment of physicians for .199
Acetarsone, untoward effects in amebiasis.ab-214
Agranulocytic leukopenia successfully treated with x-rays *161
liver therapy in granulocytopenia.....ab-226
Alcaligenes melitensis infection, vaccine therapy in ab-223
Alcoholism, chronic, blood sugar in.....ab-226
Amebiasis, carbarsone rectally in.....ab-214
desiccated hog stomach and liver therapy in ab-214
Amidopyrine, effect on agranulocytic leukopenia *161
Anemia, copper-iron therapy.....ab-225
Anesthesia, tribrom-ethanol, sequels in children born during ab-223
Anuria in eclampsia ab-226
Appendix, cecal polyp on, occluded base of .*182
Association News 193
Auto-anaphylaxis, sudden death after injection of human serum.....E-192

Bacillus alkalescens, variant of bacillus typhosus ab-213
Bismuth subcarbonate, untoward effects in amebiasis ab-214
Blood, platelets, effect of calcium on....ab-222
factors in regeneration of hemoglobin..E-192
sedimentation, erythrocyte, micromethod in ab-226
sugar, following thoracoplasty ab-225
sugar, in alcoholism and epilepsy.....ab-226
sugar, reducing effect of methylene blue. ab-222
umbilical, hydrogen ion concentration of ab-221
venous, hydrogen ion concentration of..ab-220
Board Examinations 209
Book Notices 210
Books Received .....**Adv. page 28**
Breasts, congestion, and folliculin activity.ab-222
Bronchus, cancer of.....201
Bureau of Investigation.....204

Calcium, effect on blood platelets.....ab-222
Cancer, primary, of lung.....ab-220
of bronchus 201
of larynx, treatment, Coutard's method..201
Carbarsone rectally in amebiasis.....ab-214
untoward effects in amebiasis.....ab-214
Carbon arc lamps in hospitals, tax on.....198
Cataphoresis and respiratory tract infections ab-217
Cecum, polyp, on occluded base of appendix.*182
Children, school, heart disease in, New York City *157
Climate and psoriasis C-206
Committee on Foods.....189
Convulsions, control, paraldehyde for.....ab-219
Copper-iron therapy in anemia.....ab-225
Correspondence 205
Council on Medical Education and Hospitals 209
Council on Physical Therapy.....183

Death, sudden, after injection of human serum E-192
Deaths 203
Dermatitis atrophicans lipoides diabetica....*163
of eyelids *180
Diabetes Mellitus, necrobiosis lipoidica diabeticorum (Urbach) *163
Diaphragm, anatomic changes, after phrenicectomy ab-215
Dietary advice, rational.....E-190
Diphtheria toxin-antitoxin, state stops distribution, New York 195
Disease in relation to weather.....200
new diseases in Paris.....199
Drowning, determination of.....209

Eclampsia, anuria and oliguria in.....ab-226
Electrosurgical obliteration of gallbladder..*169
Elephantiasis, experimental.....E-191
Emetine hydrochloride, untoward effects in amebiasis ab-214
Enterohepatic circulation, gallbladder as regulator ab-223
Epilepsy, blood sugar in.....ab-226
Ergotamine tartrate, in migraine.....ab-219
Erysipelas, therapy of.....*183
Erythema nodosum 207
Erythrocyte sedimentation speed, micromethod in ab-226
Estrin, excretion ab-220
Exercise, metabolic exercise tolerance test.ab-215
Eyelash dyé, dermatitis of eyelids.....*180
Eyelids, dermatitis of *180
warts on 209

Fees, payment of physicians for road accidents 199
Femur, fractured neck of, osteosynthesis..ab-221
Folliculin activity and congestion of breasts ab-222
Foreign Letters 198
Fractures, neck of femur, osteosynthesis of ab-221

Gallbladder and enterohepatic circulation.ab-223
electrosurgical obliteration *169
Genitalia, female, lymphosarcomatosis...ab-223
Glycerin in renal and ureteral calculi....ab-224
Government Services 197

Hay Fever, pyrethrum sensitization complicating C-205
Health, national, England.....198
Heart disease in school children of New York City *157
disease, mortality from *151
shifting electrical axis in pneumothorax.ab-215
Hemoglobin, factors in regeneration of..E-192
Hemophilia, diagnosis, roentgen ray in..ab-213
Hemorrhages, effect of sodium citrate....ab-220
puerperal, treatment ab-224
Heptylresorcinol, untoward effects in amebiasis ab-214
Heredity in arteriolar hypertension.....ab-216
Herpes, leukocytes in immunity to.....ab-217
Hospitals, tax on carbon arc lamps in.....198
Hydrocele, treatment ab-222
Hydrogen Ion Concentration of umbilical blood ab-221
of venous blood ab-220
Hyperglycemia and anterior pituitary-like principle ab-217
Hypertension, arteriolar, heredity in....ab-216
Hyperthyroidism, roentgen therapy.....ab-225

Icterus index, outfit to determine.....208
Infants, effect of tribrom-ethanol anesthesia in labor on new-born.....ab-223
death rate, England.....198
vomiting in infancy 206
Influenza and cataphoresis.....ab-217
Infrared radiation, sources of, in therapy..*183
Iso-anaphylaxis, sudden death after injection of human serum.....E-192

Kidney calculi, glycerin therapy.....ab-224
insufficiency in nephritis ab-225

Larynx, cancer, treatment, Coutard's method.201
Leukocytes in immunity to herpes.....ab-217
Liver extract, and raw liver in Endamoeba histolytica ab-214
factors in regeneration of hemoglobin..E-192
inflammatory swelling, mechanotherapy..ab-225
therapy in granulocytopenia.....ab-226
Lung, primary cancer.....ab-220
Lymphosarcomatosis of female genitalia..ab-223

Malaria, autochthonous, in Paris.....199
Marijuana: defined MI-212
Marriages 203
Maternity death rate, England.....198
Mediastinal glands, tuberculosis.....201
Medicine, women in, in Japan.....202
Medicolegal 212
Meetings, Coming Meetings.....212
Meningitis, anaerobic, after mumps.....ab-221
Metabolic exercise tolerance test.....ab-215
Methylene blue, reducing effect on blood sugar ab-222
Midwives, training of.....199
Migraine, ergotamine tartrate in.....ab-219
Milk, sterols in.....E-190

Narcotic addiction and nerve block.....ab-218
Necrobiosis lipoidica diabeticorum.....*163
Negroes, heredity of congenital white spotting in *179
Neoarsphenamine in tularemia.....ab-218
Neoskiodan, subcutaneously, excretory urography after *181
Nephritis, renal insufficiency in.....ab-225
Nerve block and justifiable addiction....ab-218
Neuralgia, intercostal, in gastric ulcer..ab-222
News 193
Nutrition, rational dietary advice.....E-190

Obesity, reducing in thyrosexual insufficiency ab-224
Oliguria in eclampsia.....ab-226

Pain, control, paraldehyde for.....ab-219
Paraldehyde for pain and convulsive states. ab-219
Paris, new diseases in.....199
Parotitis, anaerobic meningitis after.....ab-221
Peptic Ulcer, intercostal neuralgia in....ab-222
Physicians, prison C-206
payment of, for road accidents.....199
Pigmentation, heredity of congenital white spotting in Negroes *179
Pituitary-like principle, anterior, and hyperglycemia ab-217
Pneumococci, inhalation of, specific agglutinins in serum after.....ab-218
Pneumothorax, artificial, shifting electrical axis of heart in.....ab-215
spontaneous bilateral ab-226
Pregnancy, syphilis in.....208
Prison physicians C-206
Prostate, transurethral surgery.....ab-216
Prostatectomy, suprapubic *174
Prostitution, licensed, abolition of, in Japan.202
Psoriasis and climate.....C-206
Puerperal hemorrhages, treatment.....ab-224
Pyrethrum sensitization complicating hay fever C-205

Queries and Minor Notes.....206

Rabies in dogs, incubation period.....208
Radiation, ultraviolet and infra-red, sources of, in therapy *183
Radio Program 193
Radon ingestion, possible health dangers.ab-214
Respiratory Tract, infections, cataphoresis in ab-217
Ringworm infection of hands and feet.....208
Roentgen ray in diagnosis of hemophilia..ab-213
therapy in agranulocytic leukopenia.....*161
therapy of hyperthyroidism ab-225

Sarcoma, pathogenic principle of neoplasms.199
Scarlet Fever, spread of 208
isolation period reduced, New York.....195
toxoid, immunization with ab-219
Serum, human, sudden death after injection of E-192
Skin lesion, differential diagnosis of.....207
Smallpox, immunization, chicken embryo culture for ab-213
Society Proceedings 212
Sodium citrate as hemostatic.....ab-220
Spleen, effect on transplanted tumors....ab-221
State Board Examinations.....209
Sterols in milk.....E-190
Stomach, desiccated hog, in Endamoeba histolytica ab-214
Streptococci, hemolytic, differentiation....ab-217
Suprarenals, weight changes in.....ab-217
Surgery, transurethral ab-216
Syphilis in pregnancy.....208

Tax on carbon arc lamps in hospitals.....198
Temperature perception, modification of threshold of ab-224
Therapeutics, Cook County Hospital.....*183
Thoracoplasty and blood sugar.....ab-225
Thymus, enlarged 209
Thyroid, calorigenic action of.....ab-216
Thyrosexual insufficiency, reducing in....ab-224
Tonics and Sedatives.....**Adv. page 22**
Tuberculin, skin sensitiveness to, in primary tuberculosis *176
test, intracutaneous quantitative.....*154
Tuberculosis, active, intracutaneous quantitative tuberculin test in.....*154
diaphragm changes after phrenicectomy.ab-215
of mediastinal glands.....201
phrenicectomy in, diaphragm changes..ab-215
primary, skin sensitiveness to tuberculin in *176
quarantine farms for tuberculous cattle..198
shifting electrical axis of heart in pneumothorax ab-215
Tularemia, neoarsphenamine in.....ab-218
Tumor, transplanted, effect of spleen on..ab-221
pathogenic principle of neoplasms.....199
Typhoid bacillus, Bacillus alkalescens variant of ab-213
Typhoid-paratyphoid vaccine, change in....197
Typhus, mouse, new disease in Paris region.199

Ultraviolet radiation, sources of, in therapy.*183
Umbilical blood, hydrogen ion concentration of ab-221
Ureters, calculi, glycerin therapy.....ab-224
Urography, excretory, after neoskiodan, subcutaneously *181

Vaccine, typhoid-paratyphoid, change in....197
Vendel's solution, in hydrocele.....ab-222
Vioform, untoward effects in amebiasis...ab-214
Vitamins, discussion of.....200
Vomiting in infancy 206

Warts on eyelid.....209
Weather, disease in relation to.....200
Weight changes in suprarenals.....ab-217
Women in medicine, in Japan.....202

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, NO. 3 CHICAGO, ILLINOIS JULY 21, 1934

THE MORTALITY FROM HEART DISEASE: A CHALLENGE

CHAIRMAN'S ADDRESS

CHARLES T. STONE, M.D.

GALVESTON, TEXAS

In the United States today, heart disease in its various forms holds first place in the list of causes of death. Naturally, any condition that is of such far-reaching importance in the lives of our people is of unusual interest to physicians generally, but it is also of particular interest to them personally because carefully collected figures show conclusively that the death rate from heart disease is definitely higher among the members of the medical profession than it is among the general population. This fact is probably of considerable significance in the whole problem of the mortality from heart disease, since it provides a clear-cut opportunity for the evaluation of some of the etiologic factors involved. The life of the physician is more or less standardized by the nature of his profession with its constant nervous tension, irregular hours, heavy responsibilities and hard work. If these forces, projected into the lives of a large number of individuals, develop a class that is more susceptible to heart disease than are other social groups, it is practically certain that at least a partial insight into the larger aspects of the problem can be obtained. How well this apparently justified and obvious conclusion fits in with the established facts may later be observed.

THE INCREASE OF HEART DISEASE

If one consults the mortality statistics of the United States Census Bureau, two outstanding facts are at once apparent. The first is that heart disease is responsible for about two and one-fourth times as many deaths as its nearest rival, cancer; the second is that heart disease is steadily increasing in frequency. As computed from this source, the death rate from heart disease in 1900 was 132 per hundred thousand of population, while in 1932 it was 224 per hundred thousand—an increase of approximately 70 per cent. There are those who believe that the alleged increase of heart disease is more apparent than real. They attempt to explain the higher rates in recent years on the basis of changes in the use of terminology and the designation as heart disease of various correlated conditions in the blood vessels and kidneys. That these factors may have some bearing on the greater frequency with which heart disease finds its way on death certificates can hardly be denied, but that they account for an increase of 70 per cent in thirty-two years seems quite exaggerated. During the past fifteen or twenty years the popular appreciation by physicians of the clinical features of coronary thrombosis has undoubtedly added to the total number of heart disease diagnoses appearing in mortality statistics. However, if the percentage of this type of heart disease is estimated in a large group of cardiac cases it is found to be relatively small, so that coronary artery disease as a comparatively recent clinical entity can account for but a small part of the increasing frequency of heart disease as a whole. If one studies the carefully compiled mortality rates for the large cities and the life insurance companies, in which perhaps the most reliable figures are to be found, one sees that the trend in every instance is the same—a decidedly increasing death rate from heart disease. Then the opinion of capable clinicians who have practiced through the years from 1900 to the present is emphatically that heart disease is more commonly encountered now than it was thirty years ago.

An important fact brought out by the age incidence statistics is that heart disease has shown marked increase in frequency only in individuals past the thirtieth year of life. Before 30, fewer people die from infectious diseases now than was the case in 1900; this is in effect saying that, by avoiding serious infections, more have been carried into the age groups where heart disease takes its greatest toll. Whatever the actual facts may be as regards the increase of heart disease, however, it is sufficient for the moment to realize that it destroys more than twice as many lives as does its nearest competitor. Therefore from a public health point of view it is no exaggeration to state that the most outstanding challenge to modern medicine is the mortality from heart disease.

Almost fifty years ago, Osler said "It is of use from time to time to take stock, so to speak, of our knowledge of a particular disease, to see exactly where we stand in regard to it, to inquire to what conclusions the accumulated facts seem to point, and to ascertain in what direction we may look for fruitful investigations in the future." It is with this attitude of mind that the present discussion is undertaken. Many facts that afford definite clues are at hand; it should be our purpose to use that material which is available to add to the existing knowedge of the subject, to sponsor research that will clarify certain etiologic factors in heart disease, and to strive for the development of conditions that may be antagonistic to the operation of these factors.

THE CAUSES OF HEART DISEASE

Within the last fifteen years the relative importance of the various causes of heart disease has become increasingly appreciated and more generally understood. This is due largely to the adoption of the prac-

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

tice of classifying heart ailments from the standpoint of etiology as well as of alterations in structure and function. In 1920 this composite type of study was instituted almost simultaneously in a few of the larger Eastern clinics, where its value was at once apparent. Soon thereafter, under the sponsorship of the American Heart Association, a uniform system for the classification of heart disease from all angles resulted in its widespread use in teaching hospitals, and more recently the same organization has fostered the development of heart clinics in ever increasing numbers throughout the country. The effect of these efforts has been to revolutionize, more or less, the concepts of heart disease in the minds of physicians, so that today no cardiac diagnosis can be considered complete that does not include the three cardinal features of etiology, tissue change and functional effect. Not only has a more adequate knowledge of the clinical manifestations and interrelationships of the manifold factors in heart disease been established—that is to say, more accurate diagnosis, more exact prognosis and more rational therapy—but important facts that may materially advance the cause of the unified movement for the prevention of heart disease have been accumulated. In fact, the knowledge has progressed to a point at which it is now possible to project offensives along a wide front in battle with the forces that ultimately destroy more lives than the combined powers of the next two most important causes of death.

During the last decade there have been reported in the literature from every geographic section of the United States numerous studies of the incidence of the different types of heart disease. Quite naturally there are variations in the frequency of individual types in different localities, the explanation for which is traceable to climatic, racial, social and other influences. However, it is now positively known that four conditions—rheumatic fever, hypertension, arteriosclerosis and syphilis—are responsible for approximately 90 per cent of all heart disease. The remaining 10 per cent is accounted for by congenital defects, infectious processes (acute and subacute bacterial endocarditis and pericarditis), thyrotoxicosis, chemical toxins, chronic pulmonary diseases with resulting increase in the tension in the lesser circulation, traumas, tumors, and a small percentage of unknown factors. It is thus at once apparent that the main problem lies in the conquest of the four major factors that produce heart disease.

If the figures from statistical surveys are studied, either rheumatic fever or hypertension will be first in the list. Rheumatic fever predominates in the North and East, but elsewhere hypertension is the most important cause. Generally speaking, heart disease is approximately twice as frequent in the Northeastern section of the United States as it is in the far South, while the Middle West and Central tier of states stands in an intermediate position. An analysis of the type incidence of heart disease in these various areas establishes the irrefutable fact that the difference is due chiefly to the high incidence of rheumatic fever in those areas in which the death rate is the highest, and its very low incidence in the South; in other words, it is the result of a climatic difference in the two sections. In certain areas, particularly in the South, where the Negro population is greatest, syphilis is more often a cause of heart disease than it is in other geographic locations. Goitrous districts naturally furnish a large number of cases of thyrotoxic heart disease, but even with these and other variants taken into consideration the four chief causes remain the same. In the order of frequency with which they are operative throughout the country as a whole, hypertension, rheumatic fever, arteriosclerosis and syphilis seems to be the proper sequence of "the Four Horsemen" in the causation of nine out of ten cases of heart disease. This fact narrows the field for further study, and it should indicate the necessity of concentrating the attack on the important salients along the battlefront. A brief consideration of the problems presented by these factors will serve to emphasize the need for investigation of leads that appear to hold the greatest promise.

HYPERTENSIVE HEART DISEASE

Vascular hypertension is increasing, if the statistical data and physicians' opinions are not misleading. This is in accord with well established fact, which indicates that the cause of hypertension is to a considerable extent a result of the nervous factors incident to and consequent on the complexities of modern life. For instance, native Chinese seldom have hypertension, but those who have been transplanted into the life of the Occident show it to a very considerable degree. Similarly, among African natives hypertension is practically nonexistent, while in this country their direct descendants have a higher incidence of abnormally high blood pressure than do the whites living in the same districts. In Japan the urban population has a high hypertension rate, which is in striking contrast to the rarity of the condition among the rural inhabitants. According to a dependable informant, a close analogy is to be found in the high and low classes of the general population of Mexico, whereas in our own Southern cities, to which the erstwhile Mexican peon has migrated in large numbers, many are found to have hypertension and its sequelae. These plain facts require no elaboration. They lead straight through to the conclusion that hypertension is to a large extent a total personality reaction to that which we have elected to call "modern civilization."

The mechanism by which the anxiety, high nervous tension, and the ever pressing struggle for survival—all important factors in the daily average American life—operate to produce hypertension is partly understood. In the continued increase in arteriolar tonus resulting from excessive vasoconstriction is to be found the underlying mechanical impediment to the blood flow which provokes a blood pressure increase, and this in time becomes permanent, ultimately resulting in a generalized arteriolar sclerosis, with all the disastrous complications incident thereto. What produces the vasoconstriction is wholly unknown. It may be that psychic impulses through direct pathway communications act as stimuli to the sympathetic nervous system, the preponderant effect of which is a general heightening of arteriolar tone. Or emotional responses may provoke a hypersecretion of vasopressor substances of endocrine origin—e. g., from the suprarenals, pituitary and thyroid—which supply the vasoconstrictor stimulus. These are the most plausible concepts of the question at the moment, but subsequent research might conceivably produce different views and furnish newer methods of approach. Obesity, hereditary influences, chronic intoxications, severe exertion and other important factors need to be studied with regard to their relationship to the larger problem of hypertension, and their effects should then be correlated with those derived from other sources. However, the real crux

of the situation lies in ascertaining all of the etiologic factors in the production of essential hypertension in otherwise normal individuals. When that has been accomplished, medicine will be in a commanding position to attempt prophylactic measures with some expectation of success. Then may there be witnessed a reversal of the now rising incidence of hypertension and one of its greatest tragedies, hypertensive heart disease, in all its clinical forms.

RHEUMATIC FEVER

Rheumatic fever is apparently both a climatologic and a bacteriologic problem. Unfortunately it occurs with greatest frequency in the most densely populated part of the country, which fact, together with the extremely high incidence of accompanying cardiac complications, makes it a disease of paramount significance in the larger aspects of the mortality from heart disease. The difficulty is further enhanced by reason of the fact that the true cause and nature of rheumatic fever are not known. The mass of the evidence suggests strongly that it is a systemic infection with a peculiar predisposition to cardiac involvement. If speculation, based on the success already achieved in other infectious diseases, may be permitted, one is justified in the belief that rheumatic fever, like typhoid, diphtheria and tuberculosis, may soon be classified among the diseases with a definitely known cause and a diminishing incidence ratio. When and if its etiology is settled, then may one expect methods of prevention and treatment to be developed that may go far toward diminishing the second most important type of heart disease, an achievement that would carry especial significance, because rheumatic heart disease exacts its severest penalties from the ranks of children, adolescents and young adults.

ARTERIOSCLEROTIC HEART DISEASE

The statement to the effect that every one will die from arteriosclerosis if he lives long enough is probably true, and by the same token many deaths in the later decades of life are caused by arteriosclerotic heart disease. It is intended to include in this category only those cases in which the heart disease results from the arteriosclerosis of senescence—i. e., the degenerative type—and to exclude those in which an existing arteriosclerosis is secondary to vascular hypertension. The latter type more properly belongs to hypertensive heart disease, although at times there is an overlapping of the two types, and the distinction between them is not always sharply demarcated. Inspection of a graphic chart of deaths from heart disease by age groups shows an almost vertical rise in the curve for the age period from 55 to 70 years. That is, of course, the degenerative period when arteriosclerosis of some degree is present in most people, and most of the cardiac deaths in this group are due to arteriosclerotic heart disease; particularly is this true in the decade from 60 to 70. From 50 to 60 years of age, hypertensive heart disease still holds the premier position.

To one who is biologically minded there appears little to support the belief that the human animal was constructed to live far beyond the seventh decade. By reducing the mortality from infectious diseases in younger life, the present average age of our people has been prolonged to 59 years—a signal accomplishment—but further additions to the average expectancy will come gradually and will swell the ranks of the arteriosclerotic. This will occur in the event of real progress in the control of hypertension and rheumatic fever, in which case arteriosclerotic heart disease will in time become the foremost type of heart disease, one for which there appears to be no biologic antidote. Moreover, if prior to the age of 60 there is a decrease in deaths from all causes, there will be a proportional increase in the number of deaths from arteriosclerosis and consequently from arteriosclerotic heart disease. Arteriosclerosis, as we know it, is bound by the laws that govern the average age of a species. It is ultimately inevitable, therefore, and not subject to change.

SYPHILITIC HEART DISEASE

Syphilis continues to rank among the major causes of heart disease despite the fact that as such it is perfectly preventable, and syphilitic heart disease should therefore not exist at all. Adequate treatment of all early syphilis would automatically erase this type of heart disease from further consideration. Whenever the attitude, both lay and professional, toward syphilis changes so that it ceases to be considered a "misconduct disease," and when we begin earnestly and seriously to conduct educational campaigns against it, a single case of syphilitic heart disease will be like one of typhoid today, almost a medical oddity. So long as individuals hide their syphilis because of the fear of public condemnation, and so long as they continue to receive insufficient treatment for the cure of early syphilis, there will be all too numerous cases of the most easily preventable of all heart disease, syphilitic aortitis and aortic insufficiency.

Some improvement with regard to the minor causes of cardiac abnormalities, excepting congenital heart disease and the rare cases of tumors of the heart, might reasonably be anticipated because of the fact that thyrotoxic states account for so large a number of cases in this group. Because of a better understanding of the underlying principles connected with its pathogenesis, much has been accomplished in the prevention of goiter. Furthermore, the clinical application of basal metabolic rate determination has greatly simplified the matter of diagnosis, and the introduction of iodine into the preoperative therapy of thyrotoxicosis has rendered the prognosis more favorable now than ever before.

SUMMARY AND CONCLUSION

Regardless of how one feels about the alleged increase in the number of deaths assigned to cardiac causes, there can be no real difference of opinion as to the importance of heart disease as the foremost cause of death. To know that four primary causes are responsible for the great majority of cases of heart disease assists in focusing attention on the strategic points and suggests the lines along which investigation should be initiated and pursued. In short, if good results are to be obtained, rational methods for the prevention and treatment of essential hypertension and rheumatic fever, based on a complete understanding of their etiology, must be developed. Syphilitic heart disease can be eradicated by the means now available. In the prevention of arteriosclerotic heart disease there is little to hope for.

The whole problem of the prevention of heart disease is a formidable one. Investigation must be pursued critically and in accordance with the advice John Hunter gave Jenner relative to the latter's studies on vaccination against smallpox: "Do not think, but try; be patient, be accurate." It is ours to plan and conduct the campaign in the light of facts that are known and

with those that will be accumulated in the future. In the conquest of the causes of heart disease an enormous responsibility is placed on the medical profession, one that by reason of its magnitude should serve to stimulate our best efforts. The benefits that will accrue to mankind, in the event of successful achievement, will constitute medicine's outstanding victory over the most ominous leader of all time among "the Men of Death."

2201 Avenue D.

THE INTRACUTANEOUS QUANTITATIVE TUBERCULIN TEST

IN THE DIAGNOSIS OF ACTIVE TUBERCULOSIS

DAVID AYMAN, M.D.
BOSTON

The diagnosis of active tuberculosis is aided but little by the positive skin tuberculin test (Pirquet or Mantoux tests), for more than 90 per cent of healthy adults will react positively to this test. On the other hand, the diagnosis of active tuberculosis can be made in more than 90 per cent of people who have positive skin reactions after the intracutaneous injection of properly diluted tuberculin, according to recent reports. The present study has attempted to determine further the value of such a test with diluted tuberculin.

RATIONALE OF SUCH A TEST

The use of the dilute tuberculin reaction is based on the following simplified interpretation of experimental and clinical evidence: Past or present infection with tuberculosis makes the individual sensitive to tuberculin. One way of demonstrating this sensitivity is by a positive skin reaction following the usual skin injection of Koch's old tuberculin (Pirquet scratch method or Mantoux intracutaneous method). This sensitivity varies more or less directly with the activity of the disease.[1] Therefore a person with active tuberculosis should react to a greater dilution of tuberculin than a person with old healed tuberculosis. In other words, the tuberculin test may be used as a quantitative test. For a summary of the evidence on which this explanation is based, one should refer to the paper of Atsatt.[2]

LITERATURE

The literature concerning the use of the skin tuberculin test in a quantitative manner may be divided into the studies using the relatively inaccurate Pirquet scratch method and those using the intracutaneous Mantoux method.

The studies using different dilutions of tuberculin by the Pirquet scratch method have shown that even by quantitating the Pirquet test one may separate active from latent tuberculous infections. For the details of these studies, one should refer to the paper by King.[3] However, in order to use the tuberculin skin test as a quantitative test, it is best not to use the Pirquet scratch method, for the actual amount of tuberculin absorbed by the skin through the scratch is not known.

Of more importance to the present investigation are the studies using the intracutaneous injection of a known amount of tuberculin (Mantoux method). There have been three such studies in recent years, the results of which are enhanced by the fact that they all used a similar method and technic. In these investigations the authors experimented with different dilutions of tuberculin until they found a dilution 0.1 cc. of which gave positive reactions in their cases of active tuberculosis and negative reactions in their controls with no active tuberculosis. The dilution that was finally used varied in each study, for, since the standardization of old tuberculin is unsatisfactory, the various lots of old tuberculin used by the different investigators varied markedly in strength. Thus, the final dilution used by the different observers was 1:10,000 in one study, 1:20,000 in the second, and 1:100,000 in the third. Whereas Atsatt[2] and Blair and Galland[4] used control injections of saline solution, King[3] did not use control injections.

The results of the studies with these dilutions were strikingly successful. Thus, Atsatt found 92 per cent of eighty-five tuberculous patients reacting positively, while 90 per cent of 126 control ward patients reacted negatively. Blair and Galland found 90 per cent of 121 tuberculous patients reacting positively, while 92 per cent of 350 control ward cases reacted negatively. King did not separate his control cases from his tuberculous cases but did find that, of 225 patients comprising both tuberculous and control cases, there was a 91 per cent agreement with clinical observations. There were about 80 cases of active tuberculosis in his group.[5]

When these investigations are discussed individually, it is to be noted that Atsatt, the author of the original of these studies in 1927, did not mention what he interpreted as a positive reaction. It is probably to be inferred, therefore, that Atsatt considered a positive reaction to be a reaction of any size to his dilution of 1:10,000. Blair and Galland stated that their criterion of a positive reaction was the formation of an indurated cutaneous nodule, whatever its size, usually accompanied by erythema. King considered a positive reaction to be an area of erythema, nearly always indurated, 1 cm. or more in diameter.

The age and type of tuberculous patients used in these observations varied. Atsatt, and Blair and Galland carried out their studies exclusively in cases of bone and joint tuberculosis, both in children and in adults. King made his observations chiefly in adults with active pulmonary tuberculosis, only a few of whom were seriously ill at the time of the test.[5] Except for a few cases, it was inferred in the reports of Atsatt and of Blair and Galland that their patients were in good condition although their tuberculosis was active.

METHOD OF PRESENT STUDY

First, different dilutions of a given tuberculin were intracutaneously injected in a group of clinically nontuberculous ward patients, and the size of the positive skin reactions were noted. Old tuberculin prepared by the Massachusetts State Laboratory was secured in sufficient quantity so that the same batch lasted throughout the entire study. This tuberculin was then carefully made up each week in dilutions of 1:1,000, 1:10,000, 1:25,000, 1:50,000; 1:100,000, 1:500,000, 1:1,000,000 and 1:10,000,000. Sterile Ringer's solution was the diluent, to which 0.2 per cent phenol was

From the Medical Clinic of the Peter Bent Brigham Hospital.

1. Krause, A. K.: The Significance of Allergy in Tuberculosis, Tr. Nat. Tuberc. A., June 1921.
2. Atsatt, R. F.: Studies with a Quantitative Tuberculin Reaction, J. Bone & Joint Surg. **9**: 657 (Oct.) 1927.
3. King, R. B.: A Tuberculin Test of Value in Adults, New England J. Med. **207**: 831 (Nov. 10) 1932.
4. Blair, J. E., and Galland, W. I.: A Differential Quantitative Tuberculin Test, Am. Rev. Tuberc. **23**: 1 (Jan.) 1931.
5. King, R. B.: Personal communication to the author.

added as a preservative. One cc. tuberculin syringes and 27 gage needles were used. For a short time, 0.5 cc. syringes made by a different company were also used, but it was found that 0.1 cc. injected from such a syringe invariably produced a smaller wheal than 0.1 cc. injected from the 1 cc. syringe. Therefore, only 1 cc. syringes made by one company were used. Leakage around the hub of the syringe occasionally occurred in older syringes, so that such injections were repeated. One-tenth cubic centimeter of each of the aforementioned dilutions was injected at the same time into the forearms of a group of ward patients. In most cases, the saline-phenol control was also injected. In one group of patients, the use of a glycerin broth control containing the same amount of broth as that present in the diluted tuberculin was also tried. The reactions were always read at the end of forty-eight hours, but in many cases also at the end of twenty-four and seventy-two hours. The size of the reactions was measured in millimeters in three dimensions—width, breadth and height—the measurement of the height being obviously done roughly. In most positive reactions an area of induration was present, and this area was measured rather than the larger area of erythema that was usually present. When erythema only was present, and the control had no erythema, the area of redness was measured, the height being recorded as zero. The subjects utilized were unselected patients admitted to the medical wards of the Peter Bent Brigham Hospital with the usual variety of diagnoses that are encountered in a general medical ward. Eighty-five per cent of the patients were 30 years or more of age.

The next step was to determine the reaction of patients with active tuberculosis to these dilutions of tuberculin. To avoid possible excessive reactions, the dilutions were not all given at once but rather the weakest dilutions were first administered. The patients utilized for this part of the investigation were adult unselected patients with pulmonary tuberculosis in the wards of the Boston Sanatorium. Many of these patients were seriously ill, and some were moribund. Ninety per cent of these patients had positive sputums.

TABLE 1.—*Reactions of Clinically Nontuberculous Patients to Varying Dilutions of Old Tuberculin*

	Dilution of Tuberculin							
	1:1,000	1:10,000	1:25,000	1:50,000	1:100,000	1:500,000	1:1,000,000	Size of Reactions
Number of patients tested.....	178	178	130	202	223	125	65	
Number of positive reactions...	157	112	41	67	66	20	13	
Per cent of positive reactions..	89	63	31	33	30	16	20	Any size
Number of patients tested.....	178	178	130	202	223	125	65	
Number of positive reactions...	153	97	35	34	35	6	4	5×5 mm.
Per cent of positive reactions..	87	54	26	16	15	4	5	or more
Number of patients tested.....	178	178	130	202	223	125	65	
Number of positive reactions...	150	73	20	24	15	6	2	8×7 mm.
Per cent of positive reactions..	85	40	15	12	6	4	3	or more
Number of patients tested.....	178	178	130	202	223	125	65	
Number of positive reactions...	147	45	14	7	6	2	2	10×9 mm.
Per cent of positive reactions..	80	25	10	3	2.6	1.5	3	or more

RESULTS

1. *Reactions of Nontuberculous Patients to Different Dilutions of Tuberculin.*—Table 1 shows the different sizes and incidence of positive reactions to the injection of varying dilutions of old tuberculin into clinically nontuberculous patients. There were 223 such patients who were studied, not all of whom were given injections of all the dilutions. First, considering the percentage of positive reactions regardless of their size, it is seen that 89 per cent of the patients reacted to 0.1 cc. of the 1:1,000 dilution, while increasing dilutions gave a decreasing incidence of reactions. In this group are placed reactions of even 1 by 1 mm. in size, provided the saline control showed no reaction. It is seen that 20 per cent reacted to the 1:1,000,000 dilution, although only sixty-five were tested with this dilution.

As to the incidence of positive reactions when only reactions 5 by 5 mm. or more were counted, the 1:1,000 dilution gave 87 per cent positive reactions, the 1:100,000 dilution gave 15 per cent reactions, the 1:500,000 only 4 per cent reactions, and the 1:1,000,000 only 5 per cent reactions.

If 8 by 7 mm. is considered the lower limit in size of a positive reaction, the 1:1,000 dilution gave 85 per cent positive reactions, the 1:50,000 gave 12 per cent positives, the 1:100,000 gave 6 per cent positives, the 1:500,000 gave 4 per cent positives, and the 1:1,000,000 gave 3 per cent positive reactions.

Finally, when only reactions of 10 by 9 mm. or more are considered as positive, the 1:1,000 dilution gave 80 per cent positive reactions, the 1:50,000 gave 3 per cent, the 1:100,000 gave 2.6 per cent, the 1:500,000 gave 1.5 per cent, and the 1:1,000,000 gave 3 per cent. Both patients who reacted to the 1:500,000 and the 1:1,000,000 dilution with areas 10 by 9 mm. or more also reacted to the glycerin broth control.

TABLE 2.—*Incidence and Size of Reactions to the 1:100,000 Dilution of Old Tuberculin in Patients Who Had Roentgen Studies of Chest*

Number of Patients and X-Ray Examinations	Number of Patients with Reactions 10 by 9 mm. or More	Number of Patients with Reactions 8 by 7 mm. or more (Including 10 by 9 mm. or More)
106 negative x-rays	2	6
13 healed tuberculosis	3	5
4 minimal tuberculosis	0	0
7 active tuberculosis clinically and by x-rays	3	4

2. *Analysis of Reactions in Patients in Whom Roentgenograms of the Chest Were Taken.*—One hundred and twenty-three patients of this clinically nontuberculous group had roentgenograms of the chest taken as part of the routine study in the wards. Of these 123 patients, the roentgenograms were reported as negative in 106, in thirteen the report was old healed tuberculosis, and in four the report was minimal tuberculosis. Of the latter three cases, none presented fever or positive sputums. Table 2 shows the incidence and size of reactions to the 1:100,000 dilution in these 123 cases. Thus, of 106 patients with negative chest plates, two, or 1.9 per cent, reacted with areas 10 by 9 mm. or more in size, while six reacted with areas 8 by 7 mm. or more in size. Of thirteen patients with the roentgen report of healed tuberculosis, three, or 23 per cent, reacted with areas 10 by 9 or more. Of four patients with roentgen reports of minimal tuberculosis but with no fever or positive sputums, none reacted. In contrast, of seven patients with active tuberculosis seen in the ward, three, or 43 per cent, reacted with areas 10 by 9 mm. or more, and four reacted with areas 8 by 7 mm. or more. The three patients who did not react were moribund.

3. *Reactions of Patients with Active Pulmonary Tuberculosis.*—Table 3 presents the incidence and size

of reactions to varying dilutions of old tuberculin injected intracutaneously into patients with active pulmonary tuberculosis. It is seen that 98 per cent react positively to the dilution 1:10,000, all with reactions 10 by 9 mm. or more in size. However, in the other dilutions, the incidence of reactions 10 by 9 mm. or more is much less. Thus, in the 1:25,000 dilution the incidence of positives is 73 per cent; in the 1:50,000, 69 per cent react with 10 by 9 mm. or more; in the dilution 1:100,000, only 47 per cent react with an area 10 by 9 mm. or more. However, the latter is in contrast to 2.6 per cent of positive reactions 10 by 9 mm. or more, in the dilution of 1:100,000 in nontuberculous patients. These high percentages of reactions by unselected tuberculous patients to weak dilutions of tuberculin are in marked contrast to the low incidence of reactions to weak dilutions in the nontuberculous.

Since only 47 per cent of the patients with active tuberculosis reacted to the 1:100,000 dilution with areas 10 by 9 mm. or more in size, it is important to determine, if possible, why the remaining 53 per cent did not react similarly. The important factor appears to be the general state of the patient, as manifested by the degree of toxemia, height of fever and the like. It is of value to note whether there is any correlation in the tuberculous patients between the height of the fever and the degree of reaction to tuberculin.

4. *Height of Fever Versus Degree of Tuberculin Reaction in Tuberculous Patients.*—Table 4 presents the incidence of fever in the patients who reacted to the 1:100,000 dilution with an area 10 by 9 mm. or more in size, as compared with the incidence of fever in those who reacted with lesser sized reactions to this dilution. Not only the incidence of fever per se but the incidence of different heights of fever was determined in the tuberculous patients in relation to the size of their reactions to the 1:100,000 dilution. It is

TABLE 3.—*Reactions of Patients with Active Tuberculosis to Different Dilutions of Old Tuberculin*

	Dilution of Tuberculin					
	1:10,000	1:25,000	1:50,000	1:100,000	1:1,000,000	Size of Reactions
Number of patients tested.....	47	82	82	146	83	
Number of positive reactions...	46	80	76	130	30	Any size
Per cent of positive reactions..	98	97	93	89	36	
Number of patients tested.....	47	82	82	146	83	
Number of positive reactions...	46	72	65	85	13	8×7 mm.
Per cent of positive reactions..	98	88	80	60	15	or more
Number of patients tested.....	47	82	82	146	83	
Number of positive reactions...	46	60	56	70	10	10×9 mm.
Per cent of positive reactions..	98	73	69	47	12	or more

seen that, of seventy patients with areas 10 by 9 mm. or more to the dilution 1:100,000, only 30 per cent had fever; 85 per cent of these patients with fever had occasionally a fever of 99.5 or less, and none had 102 or more. Of thirty-four patients who reacted to the 1:100,000 dilution with areas 5 by 5 up to but not including 10 by 9 mm., twenty-seven, or 80 per cent, had fever; of these twenty-seven patients, fourteen, or 51 per cent, had a fever of 99.5 or less, and two had a fever 102 or more. Of ten patients with reactions 1 by 1 up to but not including 5 by 5 mm., nine, or 90 per cent, had fever; only five, or 55 per cent, of these had fever of 99.5 or less, while one, or 11 per cent, had fever of 102 or more. Finally, of the nineteen tuberculous patients not reacting at all to the 1:100,000 dilutions, sixteen, or 84 per cent, had fever, more than 60 per cent of whom had fever of 102 or more.

It is clear from table 4 that, the smaller the size of reaction to the 1:100,000 dilution of tuberculin in patients with active tuberculosis, the more likely is it that such patients have considerable fever and are quite toxic. The same holds true for the other dilutions and the size of the reactions to them.

One other factor, which was usually present in the patients with high fever and toxemia but which also occurred without fever, was the exudative bronchopneumonic type of reaction, as seen by the roentgen

TABLE 4.—*Incidence and Height of Fever Versus Size of Reactions to 1:100,000 Dilution of Old Tuberculin, in Patients with Active Tuberculosis*

		Number and per Cent of Patients				
Number of Patients	Size of Reaction to 1:100,000	With Fever at Time of Test	With 99.5° or Less	With 99.5° to 100.5°	With 101° up to But Not Including 102°	With 102° or More
70	20 by 9 mm. or more	21 (30%)	18* (85%)	2 (9.5%)	1 (4.7%)	0
34	5 by 5 mm. to but not including 10 by 9 mm.	27 (80%)	14 (51%)	9 (33%)	2 (7%)	2 (7%)
10	1 by 1 mm. to but not including 5 by 5 mm.	9 (90%)	5 (55%)	2 (22%)	1 (11%)	1 (11%)
19	No reaction	16 (84%)	2 (12%)	1 (6%)	3 (18%)	10 (60%)

* Only occasional fever.

examination. This bronchopneumonic reaction was often associated with little or no reaction to the lower dilutions of tuberculin.

Analysis, therefore, of the tuberculous patients who did not react to the weak dilutions of tuberculin with areas 10 by 9 mm. or more showed that practically all of them had either high fever or marked bronchopneumonic areas, or both. All these poor reactors were almost invariably advanced or moribund cases. If the poorly reacting patients with high fever and bronchopneumonic areas are subtracted from all the tuberculous patients, it is found that the dilute tuberculin test has a 93 per cent agreement with the clinical observations when the 1:50,000 dilution is used, and 83 per cent agreement when the 1:100,000 dilution is used.

COMMENT

It seems clear that with a given batch of old tuberculin it is easily possible to determine a dilution of this which will give a minimum of positive reactions of a certain size in patients without active tuberculosis and a maximum of such positive reactions in patients with active tuberculosis. More specifically, in the present study a 1:50,000 dilution of old tuberculin injected into 202 nontuberculous patients was found to give 97 per cent negative results; i. e., reactions less than 10 by 9 mm. in size. The same dilution injected into eighty-two patients with active tuberculosis gave 69 per cent of positive reactions 10 by 9 mm. or more in size, and when severely ill patients with high fever and bronchopneumonic areas in the lungs were subtracted from the total tuberculous group, 93 per cent of the tuberculous patients gave adequate positive reactions 10 by 9 mm. or more in size. In seriously ill patients it is known that the allergic responses are diminished or absent, and since all these patients had every symptom and sign of active tuberculosis, their diagnosis is obvious without the dilute tuberculin test. It therefore seems valid to subtract these seriously ill patients from

the total group. Also, the fact that such dilute reactions occur chiefly when the patient is only mildly or moderately ill rather than moribund would appear to enhance the value of the test, for the difficulty in the diagnosis of tuberculosis is greatest in those patients who are not yet seriously ill.

With only 3 per cent of clinically nontuberculous patients reacting to the 1:50,000 dilution with areas 10 by 9 mm. or more, and from 69 to 93 per cent of such positive reactions in patients with active tuberculosis (depending on whether one includes seriously ill and moribund patients), I believe that such a test has definite diagnostic value. This is in complete agreement with the previous studies. Since it is a specific test, unlike the nonspecific white blood cell count or fever and pulse chart, it would seem to merit as much use as these methods in the diagnosis of active tuberculosis. It is very unlikely that such weak dilutions will produce other than skin reactions. I have not encountered a single focal or general reaction after the 1:50,000 dilution.

With the recent availability of the crystalline tuberculoprotein, it should soon be simple to determine once for all a dilution of this tuberculoprotein which will give these reactions. Then such a dilution will always be the one to use, whereas at present the proper dilution of the old tuberculin will have to be determined for each batch.

371 Commonwealth Avenue.

HEART DISEASE AMONG ADOLESCENT SCHOOL CHILDREN OF NEW YORK CITY

MORRIS GOODMAN, M.D.
AND
JOSEPHINE W. PRESCOTT, M.A.
NEW YORK

In a recent communication we reported the organization, procedure and method of examination of the Diagnostic Cardiac Clinic of New York City.[1] The present report deals with an analysis of some of the data accumulated in the twenty-seven months of the clinic's existence. This includes data on the prevalence of cardiac abnormalities and organic heart disease among adolescent school children. The problems bearing on the school child with heart disease, including medical supervision and early diagnosis, are discussed. In the period between Oct. 1, 1930, and Dec. 31, 1932, 166,152 children applied for working certificates in New York City. Of that number only 109,964 could be included in this analysis, because the children diagnosed as having cardiac abnormalities among the remaining 56,188 were not referred to the clinic for complete cardiac study. The great majority of these children were in the age group between 14 and 17 years and approximately 2 per cent were between the ages of 12 and 14 years. The children of the latter age group were boys who applied for newsboy badges and bootblack permits, to enable them to work after school hours.

From the Department of Health Diagnostic Cardiac Clinic.
In cooperation with the Board of Education, the Heart Committee of the New York Tuberculosis and Health Association, the Employment Center for the Handicapped, and Bellevue-Yorkville Health Demonstration.

1. Goodman, Morris, and Prescott, J. W.: Department of Health Diagnostic Cardiac Clinic of New York City, New York State J. Med. **34**, May 15, 1934.

The children in this study differ in two respects from those in similar surveys.[2] They are older and the age limits are narrower. The previously reported studies almost invariably cover the complete range of elementary school age, from 6 to 14 years, whereas the children in this study are almost entirely in the adolescent age group. Their economic status is another possible difference. Since these children enter industry prematurely, it would seem reasonable to assume that many come from poverty-stricken homes. These two factors—the age and the economic status—influence the results of this analysis and will be considered later.

TABLE 1.—*Prevalence of Organic Heart Disease and Cardiac Abnormality Among School Children Applying for Working Papers from Oct. 1, 1930, to Dec. 31, 1932*

Total number examined for working papers		166,152
	Number	Per Cent
Total number included in present study	109,964	100.0
Children with suspected cardiac abnormality referred for diagnosis	1,432	1.3
Children examined in clinic	1,215	100.0
Diagnosed noncardiac	54	4.5
Diagnosed E	557	45.8
Diagnosed F	4	0.3
Diagnosed E and F	72	5.9
Diagnosed organic	528	43.5
Estimated organic in 1,432	622	43.5
Estimated organic in 109,964	622	0.57
Estimated proportion in general adolescent population		0.9

PREVALENCE OF CARDIAC ABNORMALITIES

Of the 109,964 children examined, 1,432, or 1.3 per cent, were referred to the cardiac clinic because of cardiac abnormalities. For lack of better terminology, the word "abnormality" is used to cover all the conditions for which the children were referred to the cardiac clinic, such as murmurs, cardiac enlargement, unusual arrhythmias and tachycardia. It is probable that many of these conditions are not indicative of abnormal hearts. On the other hand there are very few studies of such conditions in which the observations have been long continued, and the question of the significance of these symptoms is therefore unsettled. An incidence of 1.3 per cent for the prevalence of cardiac abnormalities is somewhat lower than the incidence of 1.9 per cent found in Boston by Robey.[2a] It is difficult, however, to evaluate this difference, since wide variations were reported by Baker,[3] who analyzed the physical records of the younger school children of New York City examined during the five years from 1915 to 1920. The minimum number of examinations in any one year was 243,416; the maximum was 328,190. Despite this large number, the reported incidence to "cardiac defect" varied between from 1.3 per cent to 1.9 per cent.

The studies by Robey [2a] and Baker [4] included children considerably younger than those of our study. A point of interest in their analyses is the prevalence of organic heart disease in the different age groups. In the Boston study [2a] organic heart disease was twice as

2. (*a*) Robey, W. H.: A Cardiac Survey of Children in Boston Public Schools, Nation's Health **9:** 21 (Dec.) 1927. (*b*) Halsey, R. H.: Heart Disease in Children of School Age, J. A. M. A. **77:** 672 (Aug. 27) 1921. (*c*) Kaiser, A. D.: Tonsillectomy in Children, ibid. **87:** 1012 (Sept. 25) 1926. (*d*) Physical Defects Among Working Boys Who Go to Continuation School, Statistical Bull. 2, Metropolitan Life Insurance Company **11**, No. 2 (Feb.) 1930.

3. Baker, Josephine S.: School Health Supervision Based upon Age and Sex Incidence of Physical Defects, Am. J. Pub. Health **12:** 465 (June) 1922.

4. (*a*) Baker, Josephine S.: School Medical Inspection in New York City, Month. Bull. Dept. Health, City of New York **2:** 97, 1921; (*b*) footnote 2.

prevalent in the age group from 11 to 15 years as it was in the age group from 6 to 10 years. Baker [3] showed a similar age distribution, varying from 0.55 per cent incidence in the 6 to 8 year old group to 1.4 per cent in the 12 to 14 age group. Other investigators [5] have supported these observations.

The facts that organic heart disease increases in the older age groups and that the prevalence of cardiac abnormalities remains approximately the same throughout childhood suggest several possibilities for the young children who have such abnormalities: 1. Their abnormalities are transient. This is the general opinion. 2. The abnormalities are early manifestations of organic heart disease, which becomes more evident with time. This possibility is suggested by the study of Fineberg and Steuer.[6] 3. Cardiac abnormalities predispose to rheumatic carditis and organic heart disease.

This interesting phase of the problem can be answered only by following for a number of years a group of children who have so-called functional abnormalities. It is hoped that some light will be thrown on this problem by a study now being conducted at this clinic of a young group of children.

PREVALENCE OF ORGANIC HEART DISEASE

Of the 1,432 children referred to the cardiac clinic, 1,215 were completely studied. Of these, 528, or 43.5 per cent, were diagnosed as having organic heart disease. Assuming the same percentage of heart disease among the unexamined group, we estimated that the number among the 1,432 referred children would be 622, or 0.57 per cent, of the entire group of 109,964. This incidence is lower than that found in most surveys, except in the careful study made in Boston,[2a] where the prevalence of organic heart disease among 119,337 school children between the ages of 6 and 15 years was 0.52 per cent. This excluded, however, 265 doubtful cases. A similar study in New York City by Halsey [2b] revealed an incidence of 0.5 per cent.

The reported percentages of organic heart disease among unselected school children vary from the low incidence found in New York [2b] to 4 per cent in Rochester.[2c] The majority of the surveys show a prevalence under 1 per cent. A study by the Metropolitan Life Insurance Company [2d] among a comparable but smaller group of employed boys between the ages of 14 and 17 years revealed 1.6 per cent with organic heart conditions. In another study of 1,000 newsboys between the ages of 10½ and 18 years [6a] the percentage was 1.5.

The low prevalence of organic heart disease among the children of this study was of interest because the children were older and they came from a poorer class than those of the general school population. Both of these factors should favor a higher occurrence rate of organic heart disease. Because the group is older, it has been exposed longer to infection and it should embrace a larger number who have had rheumatic fever. In the Boston study [2a] there were 247 children with organic heart disease in the age group 11-15 as against 112 in the age group 6-10. A similar relationship was found in the study at Philadelphia,[5a] where the prevalence among the age group between 6 and 14 years was 0.69 per cent, as against 1.1 per cent in the age group from 12 to 18 years. On this point, Baker's study [3] showed greater prevalence of heart disease in the succeeding age groups from 6 to 14 years, ranging from 0.6 per cent in the children of 6 years to 1.4 per cent in the oldest group.

The factor of poverty is mentioned, since it is generally accepted, both here and abroad, that rheumatic fever is more prevalent among the poor. Paul,[7] in summarizing this question, says: "The data on social conditions as a predisposing factor in rheumatic fever seem to indicate that the incidence of the disease, particularly in childhood, is considerably more common among poorer people, although there is some question as to whether this applies to the most destitute or not."

In spite of these facts, this survey showed an unusually low incidence of organic heart disease. The explanation for the difference between the results of this and other reported surveys seems to be in the thoroughness of the examinations and the criteria for diagnosing organic heart disease. When examinations are carefully made, a lower incidence is found. Thus, in the survey at Boston,[2a] made by special examiners, an incidence of 0.52 per cent was found. In the study by Halsey,[2b] in which the children were examined at cardiac clinics, an incidence of 0.5 per cent was reported. In a study of cardiac classes in New York City,[8] also conducted by cardiac clinics, the incidence was 0.7 per cent. In the same group of children the incidence obtained from the records of the school physicians was 1.4 per cent, nearly twice that of the figure from the cardiac clinic. In a careful study at Philadelphia,[5a] which included high school children, the reported incidence of organic heart disease was 0.9 per cent. To our knowledge, in no previously reported survey, has the cardiac examination been so complete for every suspected child. In every instance of cardiac abnormality a complete history, physical examination, teleoroentgenogram and electrocardiogram were obtained. Each child was examined in the upright and in the recumbent position, and after exercise.

The criteria for cardiac diagnosis of the Heart Committee of the New York Tuberculosis and Health Association were followed. It is thought, therefore, that the diagnoses were made with a minimum of error and that the reported incidence of organic heart disease in this group is very close to the facts. It is evident that this incidence does not represent the prevalence of the disease in the general adolescent population. There must be some who, because they know they have heart disease, do not apply for working papers, and others who are confined to bed at home or in hospitals. It is obviously impossible to determine the size of this group and it can be estimated only roughly. The ratio found in the Boston study [2a] of the number confined to hospitals to the number attending schools, brings the total number with organic heart disease to 781, or 0.7 per cent. This still fails to include ambulatory patients who are too ill to apply for working papers and those who are sick at home, classes 2B and 3. It is probable that the number of those ill at home is greater than that of those in the hospitals. This statement is borne out by the figures from the borough of Kensington, England,[7]

5. (*a*) Cahan, J. M.: The Incidence of Heart Disease in School Children in Philadelphia, J. A. M. A. **92**: 1576 (May 11) 1929. (*b*) Wilson, May G.; Lingg, Claire, and Croxford, Geneva: Statistical Studies Bearing on Problems in the Classification of Heart Disease, Am. Heart J. **4**: 164 (Dec.) 1928. (*c*) Mackie, T. T.: Rheumatic Fever, Am. J. M. Sc. **172**: 199 (Aug.) 1926.

6. Fineberg, M. H., and Steuer, L. G.: Apical Systolic Murmurs in Children, Am. Heart J. **7**: 553 (June) 1932.

6a. The Health of 1,000 Newsboys in New York City, Heart Committee, New York Tuberculosis Health Assn.

7. Paul, J. R.: The Epidemiology of Rheumatic Fever, printed by Metropolitan Life Insurance Company.

8. Special Report on Cardiac Classes: Assn. for the Prevention and Relief of Heart Disease, 1923.

where rheumatic fever is a reportable disease, and also by the report of the Committee on the Costs of Medical Care,[9] which showed a ratio of only 70.8 hospitalized cases per thousand illnesses of all types. If the figures from the borough of Kensington are applied to our study, the incidence would be increased to approximately 0.9 per cent. This, of course, is only a rough estimation.

THE ETIOLOGIC CLASSIFICATIONS

When the cases in this study are analyzed according to etiologic classifications (table 2), certain interesting facts become apparent. It will be noted that under the term "unknown etiology" there are included an unusually large number of cases. From this group are excluded the ones with a history of rheumatic fever, joint pains or chorea. These cases were all, however, of the acquired type of heart disease, with the lesions characteristic of rheumatic valvulitis. Whether they were in part due to infections not included in the rheumatic group or whether most of them presented rheumatic carditis unattended by other manifestations of rheumatic fever, as Wyckoff and Lingg[10] suggest, could not be ascertained. If the rheumatic and unknown groups of our study are combined, a total incidence of 91.3 per cent is obtained (table 2). This compares well with the similar etiologic groups of the studies by Wilson, Lingg and Croxford,[5b] in which the incidence of the rheumatic and unknown groups totaled 88 per cent, and with the study by Wyckoff and Lingg,[10] in which the combined incidence of the two etiologic types in the age group from 10 to 19 years, was 94.5 per cent. The rheumatic groups in each of these studies included more than 80 per cent of the cases. It is probable that the unknown group in our study includes many patients who were rheumatic. The large size of this group seems explainable by the fact that this was a study of an unselected class of children, whereas the studies of Wyckoff and Lingg[10] and Wilson, Lingg and Croxford[5b] were of clinic patients who in many instances came directly from hospitals, following attacks of rheumatic polyarthritis or chorea.

TABLE 2.—*Classification of Organic Heart Disease Found Among School Children at the Diagnostic Cardiac Clinic*

	Number	Per Cent
Etiologic Classification		
Rheumatic	231	43.7
Unknown	251	47.5
Congenital	42	8.0
Chest deformity	2	0.4
Hypertension	2	0.4
Total	528	100.0
Functional Classification		
Class I	386	73.1
Class IIa	136	25.8
Class IIb	6	1.1
Total	528	100.0

Surveys among the general school population,[11] on the other hand, seem to indicate that in a large percentage of cases carditis is the first and only manifestation of rheumatic fever. In Robey's study,[2a] only 29.6 per cent of the cases gave a history of chorea, rheumatic fever or both. Richter[11] found 39.5 per cent, and she includes those with histories of growing pains, arthritic pains, tonsillitis or unexplained fever. Only 19.7 per cent of the patients in our study gave histories of rheumatic fever or chorea. The incidence of congenital abnormalities was 8.0 per cent. This is in fair agreement with the reports of other studies[12] excepting that of Richter,[11] who reported the high incidence of 33.5 per cent of congenital heart disease in the survey at San Francisco.

ORGANIC HEART DISEASE FIRST DISCOVERED AT THE CLINIC

The large number of children with organic heart disease first discovered at this clinic is of unusual interest. Thirty and nine-tenths per cent of the total number of patients learned of their heart disease for the first time. Among these 163 children, only forty-two gave histories of joint pains, polyarthritis or chorea. A large majority of the cases, 74.2 per cent, were therefore included in the unknown group. When carditis occurred, it was in a form that did not incapacitate the child and therefore remained unnoticed. Obviously, none of these children are under medical supervision and all enjoy unrestricted physical activity.

TABLE 3.—*Number and Percentage of Children with Organic Heart Disease Classified According to Medical Supervision at the Time of Their Examination at the Diagnostic Cardiac Clinic*

Type of Supervision	Number	Per Cent
Under medical supervision	243	46.0
Private physician	128	24.2
Clinic	115	21.8
Not under medical supervision	285	54.0
Condition previously known	122	23.1
Condition first discovered in clinic	163	30.9
Total	528	100.0

One cannot help being impressed with the importance of this group. It constitutes almost one third of the total number of children with organic heart disease in the adolescent employed population. In these children heart disease develops while they are carrying on their regular school activities. The condition is not heralded by inflamed joints or choreiform movements, and it escapes notice until it is discovered during a routine examination or until late in the disease when cardiac symptoms bring the patient to the physician.

MEDICAL SUPERVISION

Of the children with organic heart disease, 46.0 per cent were under medical supervision (table 3). This small figure is due, for the most part, to the fact that almost one third of the children did not know that they had organic heart disease. Of those who had knowledge of their condition, 67 per cent were receiving medical care. This seems to indicate that there is no unwillingness on the part of the children to obtain medical supervision. It is ignorance of the existence of the disease that is the cause of the lack of medical supervision. This fact stresses the need for yearly examinations in order to diagnose heart disease early and bring the children under medical care.

AGES AT WHICH ORGANIC HEART DISEASE DEVELOPS

This analysis seems to support the evidence of Wilson, Lingg and Croxford,[5b] Mackie[5c] and other

9. The Incidence of Illness and the Receipt and Costs of Medical Care Among Representative Families, Publication 26, The Committee on the Costs of Medical Care, appendixes, p. 285.

10. Wyckoff, John, and Lingg, Claire: Statistical Studies Bearing on Problems in the Classification of Heart Diseases: II. Etiology in Organic Heart Diseases, Am. Heart J. **1**: 446 (April) 1926.

11. Robey.[2a] Richter, Ina M.: Incidence and Variety of Heart Disease in School Children of San Francisco, J. A. M. A. **97**: 1060 (Oct. 10) 1931.

12. Robey.[2a] Cahan.[5a] Wilson, Lingg and Croxford.[5b]

observers [13] that rheumatic heart disease develops during the school age rather than during the preschool period. In the New York schools, all children are examined by the school physician on entering at the age of 6 years unless they bring records of examinations from their private physicians. When a child is found to have a cardiac condition, it is recorded on the health card and the parents are notified. There is evidence that the tendency among the school physicians is to include in the cardiac group a large number who do not have organic heart disease.

TABLE 4.—*Known Duration of Heart Disease Among 528 Children*

	First Discovered at Clinic	1-3 Yrs.	4-6 Yrs.	7-9 Yrs.	10-12 Yrs.	13-16 Yrs.	Since Birth	Indefinite	Total
Number of children	163	130	93	62	35	15	12	18	528

It is therefore most unlikely that the organic cases found in the present study would have been missed by the school physician had the lesions existed when the children first entered school. This point is borne out also by the figures in table 4, which gives the duration of heart disease as obtained from the histories. Obviously, these figures cannot coincide with the actual duration of the cardiac lesion, which undoubtedly is longer. There were 410 children (84.3 per cent) with acquired heart disease who first learned of their condition after the age of 7 years. This is in fair agreement with the statement of Wilson, Lingg and Croxford,[5b] that in 80 per cent of the cases rheumatic heart disease develops after the age of 6 years. Robey's [2a] study also corroborates these results. He found more than twice as many children with organic heart disease in the age group between 11 and 15 years as in the age group between 6 and 10 years. These results are in disagreement with Baker's [3] interpretation of her studies, when she states that chronic diseases, including heart disease, "remain at about the same level throughout school life." It also contradicts a similar conclusion in the special reports on cardiac classes in New York City: [8] "In rare instances only do these heart defects develop during the elementary school period."

DISCREPANCIES IN DIAGNOSIS BETWEEN THIS CLINIC, SCHOOL PHYSICIANS AND PRIVATE PHYSICIANS

Because of the importance, from the aspect of public health, of accurate and early diagnosis of cardiac disease, an important question arises as to the effectiveness of the customary examinations by school or private physicians. It is therefore of interest to compare the results of this study, in which all necessary facilities for specialized diagnosis were available, with records from groups examined by medical inspectors or private physicians.

An effort was made to ascertain how frequently the diagnoses made at this clinic varied from those made by the school physician or by the private physician. All children who came to the clinic were referred with diagnoses made by medical examiners. These were often so inadequate, however, that it was found impossible to use them for the study. An analysis was made of our statistics, of those from the records of children examined during the ten months before the clinic was established and of those from the records of children examined during the summer months of 1931 and 1932. In the latter group 42,278 children were examined by school physicians but were not referred to the cardiac clinic. Organic heart disease was the diagnosis in 494 (1.2 per cent) of the children. In 1930, during the ten months period before the clinic was organized, 84,712 children were examined and an incidence of 1.4 per cent organic heart disease was found. These figures compare well with the prevalence of cardiac abnormalities obtained in our study, which is 1.3 per cent, and suggest that every cardiac abnormality was considered organic heart disease. It was impossible to compare the clinic diagnoses with those made by private physicians. Baker [4a] has shown, however, that the diagnosis by the private physician shows the same tendency toward indiscrimination. In an analysis of 27,854 records of physical examinations made by private physicians, of children entering the public schools, an incidence of 1.6 per cent of cardiac defect was found. This incidence was almost identical with that shown by the records of the medical inspectors.

It will be noted that seventy-seven children who were diagnosed at this clinic as class E (table 5) had had their activities restricted by private physicians, some for many years. In general, the school physicians and the private physicians diagnosed many more cases as "organic cardiacs" than we did. If the prevalence of organic heart disease as estimated by this clinic is correct, more than one half of the children who were denied working papers before this clinic existed were unjustifiably deprived of the right to work. This point is brought out merely to emphasize the necessity for better facilities for cardiac diagnosis, particularly when the question of employment is involved. A well organized and equipped clinic should help to eliminate this injustice and should pay for itself by the earning powers of those who otherwise would be deprived of work.

TABLE 5.—*Duration of Restriction of Activity on Medical Advice Among Seventy-Seven Children in Class E*

	Number of Years Restricted				
	1-3	4-6	7-14	Indefinite	Total
Number of children.....	44	12	15	6	77

ORGANIC HEART DISEASE COMPARED WITH OTHER IMPORTANT DEFECTS

Some idea of the importance of heart disease among adolescent children may be obtained through a comparison between the prevalence of cardiac disease and other serious defects for which children were refused working certificates. From October 1930 to December 1932, among the total 166,152 children examined, forty-two were permanently refused certificates for the following conditions: chronic pulmonary tuberculosis, five; deafness, twenty; chorea, four; serious orthopedic defects, ten; trachoma, one, and irremediable defective vision, two.

When 0.57 per cent was used as the incidence of organic heart disease, 930 of the total number were estimated to have organic heart disease. Thus, it is seen that heart disease as an important defect far outranks the others.

SUMMARY

1. In New York City during the twenty-seven months from Oct. 1, 1930, to Dec. 31, 1932, 166,152

13. Robey.[2a] Cahan.[5a] Baker.[3]

children between the ages of 14 and 17 years were examined for working papers.

2. A diagnosis of cardiac abnormality was made in 1,432 (1.3 per cent) of 109,964 of the total number, and the patients were referred to the diagnostic cardiac clinic for cardiac study. This study included in each case a complete history, physical examination by a cardiologist, an electrocardiogram, a teleoroentgenogram and urinalysis.

3. A complete study was made of 1,215 of the cases, and 528 were found to present organic heart disease. This was estimated to indicate an incidence of 0.57 per cent of the total number.

4. The estimated incidence of organic heart disease in the general adolescent population is 0.9 per cent.

5. An unusually large number (47.5 per cent) of the children with organic heart disease did not give a history of rheumatic polyarthritis, chorea or joint pains and were included in the group in which the etiology of the heart disease was unknown. All of these showed the rheumatic valvulitis which characterizes acquired heart disease.

6. Of the total number with organic heart disease, 163 children (30.9 per cent) learned of their condition for the first time at this clinic. Of this group, 74.2 per cent are classified as of unknown etiology. It is believed that many of these cases remain undiscovered because the only rheumatic manifestation was carditis and that the lesion had developed insidiously without incapacitating the child or interrupting its school activities.

7. A diagnosis of a functional condition (abnormal signs) or potential heart disease was made in 633 children (52 per cent) who were referred because of a cardiac abnormality. In fifty-four (4.5 per cent) there were no abnormal signs or history of rheumatism. The school physician and the private practitioner show the tendency to include in the organic group many who have no evidence of organic heart disease.

8. Two hundred and eighty-five children (54.0 per cent) were not under medical supervision. Of those who received medical care, 128 (52.7 per cent) were under the care of private physicians. The other 47.3 per cent were receiving care at a cardiac or general medical clinic.

9. This study seems to indicate that acquired heart disease develops in children of school age.

10. In the adolescent school population in New York City, heart disease far outnumbers all other serious defects.

CONCLUSION

The prevalence of organic heart disease among the adolescent population of New York City is estimated at 0.9 per cent. A large number of children with organic heart disease, approximately one third of the total, do not know that they have the disease and are not under medical supervision. The medical facilities of the department of health are entirely inadequate from the point of view of the cardiac child in school.

The greater degree of accuracy in cardiac diagnosis rendered possible by the facilities of the diagnostic cardiac clinic has decreased by more than 50 per cent the number of children who are refused working certificates. The correction of this injustice and the systematic procedure to obtain medical supervision for all of those who have organic heart disease have justified the existence of this clinic.

75 East Fifty-Fifth Street.

AGRANULOCYTIC LEUKOPENIA

REPORT OF A CASE SUCCESSFULLY TREATED WITH X-RAYS AND SOME OBSERVATIONS ON THE EFFECT OF AMIDOPYRINE

JULIEN E. BENJAMIN, M.D.
AND
JOSEPH B. BIEDERMAN, M.D.
CINCINNATI

As early as 1931 Kracke[1] reported severe and repeated attacks of agranulocytosis in an individual using large amounts of coal tar derivatives. He likewise suggested that the benzene chain contained in the drugs might act as a powerful leukocytic depressant. More recently, he[2] has called particular attention to this fact in a review of nine cases. Madison and Squier[3] directly accuse certain of the benzene derivatives as causative factors of granulopenia in a large number of cases.

The following case is reported because it adds to the evidence that severe granulopenia may follow the administration of drugs of this group:

REPORT OF CASE

History.—A white woman, aged 48, a nurse, while on duty suddenly experienced the prodromal symptoms of a grippal infection, characterized by headache, chills, exhaustion and sore throat. After two or three days of self medication (?) her condition grew worse and she was admitted to the Jewish Hospital, Jan. 13, 1931, extremely ill. The face was flushed, the eyes were dull and she could not raise her voice above a whisper.

The temperature was 103 F., the respiration rate was 20, and the pulse rate was 110. The breath was fetid, and the soft and hard palates were dark red and of a granular appearance. The physical examination was otherwise negative. The laboratory reported a slight trace of albumin and an occasional finely granular cast in the urine. The blood picture was as follows: The red blood cell and hemoglobin were normal, the total white cell count was 1,700, the polymorphonuclears were 8 per cent, the lymphocytes were 68 per cent, the transitionals were 22 per cent, and the large mononuclears were 2 per cent.

The patient was immediately given high voltage roentgen therapy over the long bones by Dr. Samuel Brown, according to the dosage in the accompanying table.

Dosage of Roentgen Therapy Given

Date	Region	Milli-amperes	Filter	Time, Minutes	Kilo-volts	Distance, Inches
1/16/31	Right leg	5	3 mm. aluminum	5	90	12
1/17/31	Right arm	5	3 mm. aluminum	5	90	12
1/21/31	Left arm	5	3 mm. aluminum	5	90	12

The effect of these treatments was most impressive. There was a fairly prompt alleviation of the severe aches, the fever gradually receded, and the white cell count altered as follows: January 20 the total white cell count was 1,050, the polymorphonuclears were 41 per cent, the lymphocytes were 38 per cent, the transitionals were 12 per cent and the large mononuclears were 9 per cent. January 25 the total white count was 2,600, the polymorphonuclears were 61.5 per cent, the lymphocytes were 33 per cent, the transitionals were 3.5 per cent and the large mononuclears were 2 per cent.

The effect of roentgen treatment on the white cell count is shown in chart 1.

Read before the Academy of Medicine, May 7, 1934.

1. Kracke, R. R: Am. J. Clin. Path. **1**: 385 (Sept.) 1931.
2. Kracke, R. R.: Am. J. Clin. Path. **2**: 11 (Jan.) 1932.
3. Madison, F. W., and Squier, T. L.: Primary Granulocytopenia After Administration of Benzene Chain Derivatives, J. A. M. A. **101**: 2076 (Dec. 23) 1933.

Course of Illness.—During the rest of the year 1931 and the first half of 1932, the patient had several attacks of chills, fever and sore throat, during which time the white cell count was lowered in the characteristic manner. In each instance one of the coal tar derivatives (?) was taken. The attacks were mild, with the exception of one in which there was a severe stomatitis followed by extensive sloughing of the soft tissues. The white cell count on this occasion was 850, with 91 per cent lymphocytes and 9 per cent polymorphonuclears. This attack was amenable to roentgen therapy.

For the past seven months the patient has remained well. On April 18, 1934, the blood picture was as follows: The white blood cell count was 3,700, the polymorphonuclears were

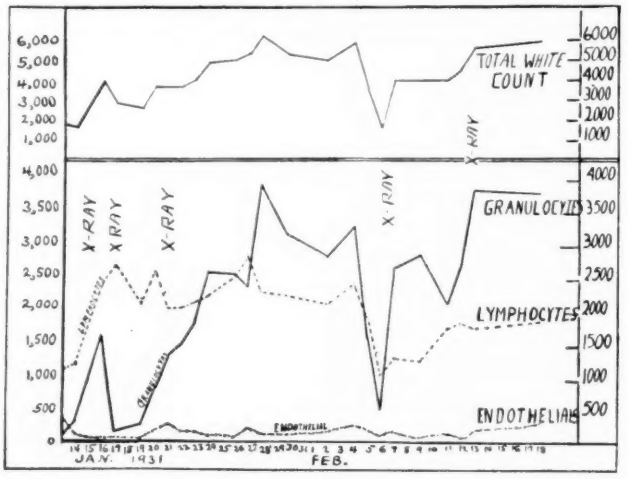

Chart 1.—The variations in the total white and differential blood counts during two attacks of agranulocytosis. The effect of roentgen treatments is shown.

69 per cent, the lymphocytes were 22 per cent, the large mononuclears were 6 per cent and the transitionals were 3 per cent. The white blood cell count rarely exceeded 4,000.

Effect of Administration of Amidopyrine.—April 19, the patient agreed to take 10 grains (0.648 Gm.) of amidopyrine, a drug she probably had taken frequently. At 4 p. m., exactly twenty-four hours after the preceding cell count and three hours after the ingestion of the drug, the count had fallen to the levels shown in chart 2. The total white cell count was 1,700, the polymorphonuclears were 50 per cent, the lymphocytes were 44 per cent, the large mononuclears were 4 per cent and the transitionals were 2 per cent.

The patient stated that one hour after she took the amidopyrine a headache and backache developed and she was nauseated. A mild sore throat gradually developed and when she was seen the temperature was 99.2.

April 20, exactly twenty-four hours after she took the amidopyrine, the white blood count was as follows: The total count was 1,000, the polymorphonuclears were 56 per cent, the large mononuclears were 8 per cent, and the transitionals were 11 per cent. The symptoms at this time were exaggerated and the patient was considerably prostrated. There was also swelling of the gums.

April 21, forty-eight hours after she took the drug, the white cell count tended to return toward the normal level: The total count was 2,500, the polymorphonuclears were 39 per cent, the lymphocytes were 49 per cent, the large mononuclears were 4 per cent and transitionals were 8 per cent. The patient's general condition was unchanged, although the throat symptoms were somewhat worse.

April 22, seventy-two hours after the initial dose of amidopyrine, the blood cell count and the general condition were practically unchanged.

April 23, four days after she took the drug, the white cell count was 4,400, the polymorphonuclears were 53 per cent, the lymphocytes were 39 per cent, the large mononuclears were 3 per cent and the transitionals were 5 per cent. There was general improvement on the part of the patient. Subsequent cell counts have been normal.

April 27, the white cell count was 5,200, the polymorphonuclears were 66 per cent, the lymphocytes were 28 per cent, the large mononuclears were 3 per cent and the transitionals were 3 per cent.

The patient was given 10 grains (0.65 Gm.) of acetylsalicylic acid. Studies of the blood demonstrated that the white count was unaffected and the patient's condition remained satisfactory.

April 30, the white cell count was 4,700, the polymorphonuclears were 54 per cent, the lymphocytes were 38 per cent, the large mononuclears were 4 per cent and the transitionals were 4 per cent.

The patient was given 2 grains (0.13 Gm.) of alurate (allyl-iso-propyl-barbituric acid) and the effect on the blood was studied in a similar manner, with negative results.

Allergy Tests.—In an attempt to determine whether the reaction of the hematopoietic organs to these drugs was of an atopic nature, as suggested by Pepper,[4] or was the result of a hypersensitivity, as is hinted at by Madison and Squier,[3] the patient was subjected to the following procedure:

After it had been determined that there was no instance of an allergic phenomenon in her personal or family history, skin tests were made with fifty-four common foods by the intracutaneous method.[5] The total nitrogen content of the testing extracts was 0.05 mg. per cubic centimeter. The patient reacted positively to tea, parsnips, lemons, barley, pecans and chicken. Given a test meal of these ingredients, the white blood count decreased only slightly and the patient experienced no ill effects. The patient was next tested (patch method) with acetylsalicylic acid and amidopyrine; the results were negative.

Following this she was given intracutaneous tests with acetylsalicylic acid and amidopyrine; the results were negative. Passive transfer tests[6] were now made, in which 0.1 cc. of the patient's serum was injected into the skin of a normal subject. This was followed forty-eight hours later by the injection into these sites on the normal subject of test solutions of actylsalicylic acid and of amidopyrine. No reaction resulted, indicating the absence of reagins for acetylsalicylic acid and amidopyrine in the blood of the patient.

COMMENT

The granulopenia, at least in the case here reported, was not of an atopic nature but more in the nature of a drug hypersensitivity with the hematopoietic system acting as the shock organ.

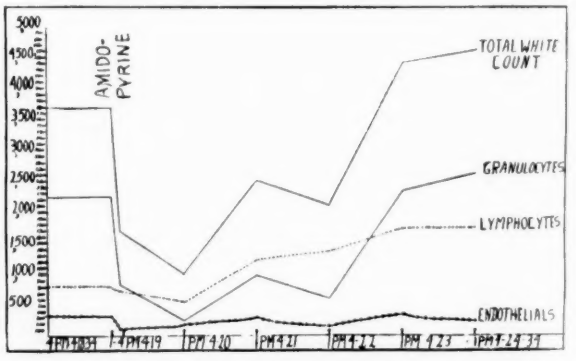

Chart 2.—The effect of the administration of 10 grains (0.648 Gm.) of amidopyrine during a remission that has lasted eighteen months.

SUMMARY

1. A case of agranulocytosis herewith reported was apparently amendable to high voltage roentgen therapy.

2. During a period of good health the patient was given 10 grains (0.65 Gm.) of amidopyrine under control. This produced all the symptoms of agranulopenia within forty-eight hours.

4. Pepper, O. H. P.: California & West. Med. **35**: 173 (Sept.) 1931.
5. Cooke, R. A.: Laryngoscope **25**: 108, 1915.
6. Walzer, M., and Kramer, S. D.: J. Immunology **10**: 835 (Sept.) 1925.

3. The administration of acetylsalicylic and ally-isopropyl-barbituric acids caused no unfavorable symptoms.

4. Intracutaneous, patch and passive transfer tests gave negative reactions.

5. In this patient the effect of amidopyrine was one of hypersensitivity to the drug and was not of an atopic nature.

19 West Eighth Street.

NECROBIOSIS LIPOIDICA DIABETICORUM (URBACH)

DERMATITIS ATROPHICANS LIPOIDES DIABETICA (OPPENHEIM)

HENRY E. MICHELSON, M.D.
AND
CARL W. LAYMON, M.D.
MINNEAPOLIS

Until 1928 the only recognized cutaneous change in diabetes mellitus which had any possible diagnostic value was xanthoma diabeticorum. In that year Oppenheim [1] observed and described a condition which had a well defined clinical appearance and occurred only in diabetes. He called the condition dermatitis atrophicans lipoides. Urbach [2] reported the study of a similar case in 1932. He entitled the condition necrobiosis lipoidica diabeticorum. Since the report of these first two cases, other examples have been recorded by Galewsky,[3] Gottron,[4] Balbi [5] and Zeisler and Caro.[6] There is, as yet, no official international nomenclature for this condition. Because the majority of the observers have used the name suggested by Urbach, we have adopted it for the sake of convenience.

LITERATURE

Urbach [2a] wrote the first formal article on necrobiosis lipoidica diabeticorum and since then has reviewed the condition in other contributions.[7] He regarded the disease as a metabolic dermatosis, related to the disturbances of lipoid metabolism as well as to diabetes. His paper reported the case of a woman, aged 44, who had been treated for severe diabetes mellitus since 1926. In 1928 a cutaneous lesion appeared on the calf of the left leg, and a year later two similar lesions were noted on the left ankle. At the time of examination there were numerous lesions of the lower extremities in various stages of development. The more recent lesions were papules, while the larger, older ones were plaques.

Although Oppenheim had observed his patient since 1928, the complete study of the case was not published until October 1932.[1a] The patient had been treated for diabetes by Professor Stejskal for several years, and the skin changes had appeared one year after the onset of the diabetes. At the time of the first examination in 1928 there were cutaneous lesions on the anterior and the posterior surfaces of the lower extremities, the arms and the trunk. At this time the buttocks, palms and soles did not show the lesion. In 1932 these areas as well as the face were affected. The early lesions were papules and the later ones were plaques, identical with the lesions Urbach had observed in his patient.

Galewsky [3] presented the third case of this skin condition and showed moulages and microscopic sections at the meeting of the Dresden Dermatologic Association in October 1932. A complete study of the case has not been reported.

The fourth case was shown by Gottron [4] before the Berlin Dermatologic Society in December 1932. The patient was a woman, aged 37, who had had diabetes since 1927. Skin lesions had developed gradually on the lower extremities for four years, in spite of the fact that the diabetes had improved. Numerous new lesions had appeared within the past year which superficially resembled morphea. The total cholesterin, cholesterin esters and fatty acids in the blood were abnormally high.

Balbi's [5] patient, a man, aged 55, presented a severe type of the disease. The lesions clinically were similar to those in the previous cases, except that many ended in central ulcerations.

The fifth case was that of a man, aged 27, presented by Zeisler and Caro [6] to the American Dermatological Association in Chicago in 1933. Since then, these observers have seen another case in a white woman, aged 72.

TABLE 1.—*Classification of Lipoids*

General Group	Individual Example	General Chemical Composition
I. True neutral fat (glycerinesters)	.....	Glycerin and fatty acid
II. Cholesterin and Cholesterin esters	.....	Cholesterin and fatty acid
III. Lipids		
1. Phosphatides		
a. Unsaturated	Lecithin and cephalin	Organic base + glycerin-phosphoric acid + fatty acid
b. Saturated	Sphingomyelin	Organic base + phosphoric acid + fatty acid
2. Cerebrosides	Phrenasin and kerasin	Organic base + galactose + fatty acid

As far as we are able to determine, the case we discuss in this paper is the seventh recorded in the literature. The patient was younger than those in previous reports. Before the case is reported it is important to review briefly the classification of lipoids and the cutaneous lipoidoses and to give a few facts about the histochemistry of these fatty substances.

During the past twenty-five years the term lipoid has appeared frequently in medical literature. Although it is beyond the scope of the dermatologist to go into the detailed chemistry of the lipoids, it is advantageous to consider briefly the substances that are included in this group and the diseases in which they play an important rôle. Lipoid is a generic name applied to all those substances in the organism which in their general chemical and physical properties, and especially

---

From the Division of Dermatology, University of Minnesota Medical School, Dr. Henry E. Michelson, director.

1. (*a*) Oppenheim, M.: Ueber eine bisher nicht beschriebene, mit eigentümlicher lipoider Degeneration der Elastica und des Bindegewebes, einhergehende chronische Dermatose bei Diabetes Mellitus (Dermatitis atrophicans lipoides diabetica), Arch. f. Dermat. u. Syph. **166:** 576, 1932; (*b*) Eigentümliche disseminierte Degeneration des Bindegewebes der Haut bei einem Diabetiker, Zentralbl. f. Haut- u. Geschlechtskr. **32:** 179, 1929; (*c*) Eigentümliche Bindesgewebesdegeneration, ibid. **36:** 162, 1931; (*d*) Eine noche nicht beschriebene Hauterkrankung bei Diabetes mellitus (Dermatitis atrophicans lipoides diabetica), Wien. klin. Wchnschr. **45:** 314 (March 4) 1932.

2. (*a*) Urbach, E.: Eine neue diabetische Stoffwechseldermatose: Nekrobiosis lipoidica diabeticorum, Arch. f. Dermat. u. Syph. **166:** 273-285, 1932; (*b*) Kutane Lipoidosen, Dermat. Ztschr. **66:** 371 (June) 1933; (*c*) Lipoidstoffwechselerkrankung, Handb. d. Haut- u. Geschlechtskr. **12:** 328, 1932.

3. Galewsky, E.: Nekrobiosis lipoidica diabetikorum (Urbach), Zentralbl. f. Haut- u. Geschlechtskr. **43:** 252 (Jan.) 1933.

4. Gottron, H.: Dermatitis atrophicans lipoides diabetika, Zentralbl. f. Haut- u. Geschlechtskr. **43:** 47 (March) 1933.

5. Balbi, E.: Ricerche intorno alla patogenesi della necrobiosis lipoidica diabeticorum Urbach-Oppenheim, Gior. ital. di. dermat. e sif. **74:** 14 (Feb.) 1933.

6. Zeisler, E. P., and Caro, M. R.: Necrobiosis Lipoidica Diabeticorum, Arch. Dermat. & Syph. **29:** 167 (Jan.) 1934.

7. Urbach, references 2b and 2c.

in their solubilities, resemble the fats. The classification [8] of lipoids is shown in table 1.

The term lipid, as adopted at the International Congress of Chemistry in 1923,[8a] was intended to designate only phosphatides and cerebrosides, although Schaaf [9] and Wile [10] have since applied it to the total of all fat-like components of tissues or blood that are soluble in ether and alcohol; in other words, total lipoids.

Although cholesterol, one of the sterol group of alcohols, is related to the other lipoids only in its solubility, it can be seen from the table that the other lipoids show common qualities in their chemical make up. All of them contain fatty acids, and the same acid may be found in different lipoids. Glycerin is present in both neutral fat and unsaturated phosphatides, and similar organic bases occur in more than one lipoid. (Choline occurs in both unsaturated and saturated phosphatides and sphingosin occurs in saturated phosphatides and cerebrosides.)

The normal values for plasma lipoids are: neutral fat, 100-250 mg. per hundred cubic centimeters; fatty acids, 250-450; cholesterin and esters, 110-150; phosphatide (lecithin), 200-250; total lipoids (lipid-Schaaf), 700-800.

TABLE 2.—*Classification of the Cutaneous Lipoidoses (Urbach)* *

Type	Chief Features	Lipoid
Generalized Types		
Xanthelasma (infiltration type)	Palpebral (essential and secondary types); includes Hand-Schüller-Christian disease; foam and giant cells microscopically	Cholesterin and cholesterin esters (intracellular)
Extracellular cholesterinosis (Kerl-Urbach)	Multiple, reddish brown papules and nodules; sometimes resembles erythema multiforme, located on extremities, trunk and mucosae; extracellular lipoid deposits, especially as mantles around the vessels; no foam cells	Cholesterin and cholesterin esters (extracellular)
Hepatosplenomegalic skin and mucous membrane lipoidosis (Burger-Grutz)	Yellow firm nodules on skin of face and extremities; mucous membrane lesions; spleen and liver greatly enlarged; lipemic fundi; increased phosphatides in blood; perivascular lipoid mantles and intracellular and extracellular lipoid granules	Phosphatides (intracellular and extracellular)
Lipoidproteinosis (Urbach-Wiethe)	A familial disease occurring in the course of latent diabetes; yellowish nodules on skin and mucosae, hyperkeratotic lesions on extremities; hoarseness (laryngeal involvement) usually since birth; no foam cells	Probably phosphatides joined to a protein
Localized Types		
Necrobiosis lipoidica diabeticorum	Urbach states that in one sense this disease mught be considered a generalized lipoidosis since there is a hyperlipemia; however, the earliest symptom is the necrobiosis, and is the one on which the disease depends	Type of lipoid not definitely established
Resorption xanthelasmas	Due to local freeing of lipoids, as in gummas and scars	Cholesterin and cholesterin esters (intracellular)
Lipoid degeneration of the elastins (Kreibich) or imbibitic lipoidica telae elasticae (Urbach)	The process that occurs in sailors' skin, and in cutis rhomboidalis nuchae	Type of lipoid not definitely established

* Internal lipoidoses (Gaucher's and Niemann-Pick's disease) not mentioned in this classification.

Lipoids are found normally in all living matter and are therefore considered as essential components of protoplasm. Their concentration and nature may vary in different tissues, and their exact function is not definitely known. They may also appear abnormally in the skin, mucous membranes, blood, bones and internal viscera, forming the basis for many distinctly varied diseases. In this paper the lipoidoses that are entirely internal in their localization, such as Gaucher's and Niemann-Pick's disease, are not considered. Urbach's classification of the cutaneous lipoidoses is shown in table 2.

HISTOCHEMISTRY

It is generally accepted that the isolated, chemically pure, lipoids can be differentiated from one another by histochemical methods. This differentiation is accomplished by various lipoid stains on formaldehyde-fixed tissue and by extraction of the lipoids by means of solvents such as acetone, ether and absolute alcohol. Histochemical methods, however, have only a relative value in differentiating the lipoids that may occur abnormally in the tissues. Kutschera-Aichbergen[8c] has concluded, after exhaustive experimentation, that the color characteristics of a certain chemically pure isolated lipoid cannot always be brought out in the same way in the tissues, where there is usually a mixture of lipoids and where the staining reactions can be influenced by substances in the cell protoplasm near the lipoids. A lipoid that shows a definite staining property in the pure state can show a changed staining reaction or a lack of staining reaction in the tissues. Thus one cannot say positively that a definite lipoid is present in the tissues because a color is obtained that coincides with the color obtained with the same stain on the same lipoid in the pure state. Kutschera-Aichbergen stated, furthermore, that until 1925, at least, lipoid analysis had been greatly overrated. Balbi [5] noted that Hueck maintained that precision with differential staining and extraction methods is impossible and that Kaufmann-Lehmann believes that sudan III is the only reliable lipoid stain.

TABLE 3.—*Reactions for Lipoids*

Reaction	Neutral Fat	Free Cholesterin	Cholesterin Esters	Phosphatides
Sudan III.....	Scarlet or orange red	Scarlet or orange red	Scarlet or orange red	Stain poorly (light yellow) if at all
Nile blue sulphate	Red	Blue-violet	Blue-violet	Blue-violet
Ciaccio.....	Unstained	Unstained	Unstained	Reddish yellow
Smith-Dietrich...	Unstained	Unstained	Unstained	Blue-black
Fischler.....	Used for the demonstration of fatty acids			
Schultz.....	Unstained	Unstained	Blue-green	Unstained
Kossa.....	Stains calcium black			
Benda.....	Neutral normal fat, red; necrotic fat, green			
Digitonin.....	Negative	Precipitates	Negative	Negative
Double refraction	Absent	Slight	Positive	Slight

Thus it appears that a direct chemical analysis is necessary to ascertain the types of lipoids that are present in any given tissue. The reactions that have been determined for the lipoids in their pure states are shown in table 3.

Table 3 shows that double refraction is completely absent only in neutral fat, that cholesterin, cholesterin esters and neutral fat stain well, while the phosphatides stain poorly, if at all, with sudan III, and that the

8. (*a*) Peters, J. P., and Van Slyke, D. D.: Quantitative Clinical Chemistry, ed. 1, Baltimore, Williams and Wilkins Company, 1931, p. 218. (*b*) Howell, W. H.: Textbook of Physiology, ed. 11, Philadelphia, W. B. Saunders Company, 1930, pp. 81 and 956. (*c*) Kutschera-Aichbergen, H.: Beitrag zur Morphologie der Lipoide, Virchows Arch. f. path. Anat. **256:** 569, 1925. (*d*) Urbach.[2c]

9. Schaaf, F., and Werner, A. J.: Die Pathogenese der Xanthome, Arch. f. Dermat. u. Syph. **162:** 217, 1930.

10. Wile, U. J.: Eckstein, H. C., and Curtiss, A. C.: Lipid Studies in Xanthoma, Arch. Dermat. & Syph. **19:** 35 (Jan.) 1929. Eckstein, H. C., and Wile, U. J.: Lipid Studies in Xanthoma, J. Biol. Chem. **87:** 311 (June) 1930.

phosphatides are best stained with the Ciaccio and the Smith-Dietrich methods.

Table 4 shows the results to be expected in fractional lipoid extractions.

Up to the present time the only reports of histochemical studies in necrobiosis lipoidica diabeticorum have been those of Urbach and Balbi. For the sake of brevity, their results are shown schematically in table 5.

The reddish brown obtained by staining with sudan III, and the reddish tint obtained with nile blue sulphate, were suggestive of the presence of neutral fat, while the black given with Smith-Dietrich and the positive staining with Ciaccio indicated the presence, in part at least, of phosphatides. The lack of double

TABLE 4.—*Fractional Lipoid Extractions*

Solvent	Lipoids Extracted	Lipoids Not Extracted
Acetone.....	Neutral fat, cholesterin-esters, acetone-soluble phosphatides, fatty acids	Unsaturated and saturated phosphatides and cerebrosides
Ether.....	Unsaturated phosphatides	Saturated phosphatides and cerebrosides
Absolute alcohol	Saturated phosphatides and cerebrosides	

refraction was against the presence of cholesterin esters, and the negative reaction to digitonin favored the absence of free cholesterin. The Schultz reaction for cholesterin was surprisingly positive in Balbi's case, but he was of the opinion that the digitonin reaction was the more reliable and the one to be accepted. Urbach likewise found the digitonin reaction negative. It is to be noted that in all cases in which two analogous reactions were done, Urbach and Balbi were in complete agreement.

In Balbi's case, a large part of the lipoids in the tissues were removed by acetone extraction, as proved by restaining with sudan III. Traces of reddish stain remained in some areas, however. After extraction with ether there were still traces of sudanophilic substances, but after extraction with absolute alcohol and benzene there was almost complete absence of substances staining with sudan III. In each extraction, the formaldehyde-fixed frozen sections were allowed to remain in the cold solvent for twenty-four hours and then were stained.

Balbi deduced from the results of the extractions that a large part of the lipoids in the tissues are to be grouped with neutral fat, cholesterin, cholesterin esters and acetone-soluble phosphatides, owing to the fact that they were extracted with acetone. From the staining reactions (digitonin negative, double refraction negative) it is natural to assume that most of the extracted lipoid was neutral fat. Almost all the remaining lipoid was extracted with ether, suggesting that it belonged to the group of unsaturated phosphatides. Balbi made these deductions reservedly but believed that the studies were at least an aid in determining the general groups to which the lipoids in question belonged.

CLINICAL FEATURES OF NECROBIOSIS LIPOIDICA DIABETICORUM

Both Urbach and Oppenheim have agreed that the earliest lesions are sharply bordered, distinctly elevated red papules from 1 to 3 mm. in diameter, which may be capped by a slight scale and which do not disappear under glass pressure. Oppenheim has termed these lesions the first stage of the disease.

The well developed lesions, which may be considered representative, are round, oval or irregular plaques with well defined borders, of firm consistency, and having a smooth, glistening surface, which looks as if it were covered with a tightly stretched layer of cellophane. Oppenheim has noted that the lesions may assume the glazed appearance of lichen planus and has reported definite ringed lesions, violet at the periphery, followed by a yellow ring with a whitish center. The fully developed lesions appear to have a depressed center, with atrophy.

In all the recorded cases the color has been uniform. At first glance, one is immediately reminded of a xanthomatous lesion. There is a peculiar yellow tint which suggests this, but on more careful scrutiny one realizes that there is a difference in the color of the plaque at the center in contrast to its color at the periphery. The outer zone is a shade of violet, with a gradual transition to a lighter, more yellowish pink tone in the center. The surrounding skin is normal.

Many fine telangiectatic vessels trace over the surface of the plaque, which is usually smooth and without secretion. In Balbi's patient many of the lesions ulcerated.

Morphologically, the typical lesion, which Oppenheim has designated as the second stage of the disease, is simply a well defined plaque with an identifying color closely related in its general characteristics to the cutaneous xanthelasmas.

Oppenheim has described a third stage, which he states is not shown in all cases. It is characterized by a definite delling of the center of the lesion, a more diffuse border, and a central grayish white scale.

Judging from the smaller number of cases that have been reported, the disease can occur at any age and in either sex. The extreme age limits have varied from 10 years in our patient to 72 years in one of the patients of Zeisler and Caro. The beginning is insidious and the course throughout is asymptomatic. The most common location is on the lower extremities, especially at the ankle region. The forearms are next in order of frequency, and lesions have been reported on the trunk, face, palms and soles.

TABLE 5.—*Histochemical Studies*

	Urbach	Balbi
Sudan.....	+	+
Nile blue.....	No report	Blue-red
Ciaccio.....	No report	+
Smith-Dietrich.....	No report	+
Digitonin.....	—	—
Double refraction.....	—	—
Schultz.....	No report	+
Benda.....	—	No report
Kossa.....	+	+
Amyloid.....	—	—

REPORT OF CASES

CASE 1.—*History.*—K. D., a girl, aged 10 years, had been treated for diabetes for the past five years. Both dietary restrictions and from 25 to 35 units of insulin daily were required to control the disease. Under this regimen, growth and development had been normal. The first cutaneous lesion, which was at first thought to be a bruise, had appeared on the lateral surface of the right ankle about three years previously and had changed but little in size and appearance since it was first noticed. About eight months following the onset of the initial lesion a second one appeared on the calf of the right leg, as a red pimple, resembling a mosquito bite. Later, this lesion became a plaque that spread peripherally and assumed characteristics identical with the older lesion except for the size.

Two new lesions had developed eight months before on the dorsum of each foot and could be palpated before they could be seen. They were lighter in color and smaller than the older ones but were duplicates in all other respects.

The eruption had remained asymptomatic throughout its course and there had been no other cutaneous lesions at any time. The mother, father, sister and brother of the patient were all living and well and free from cutaneous eruptions. No other member of the family had diabetes.

Physical Examination.—The general physical examination was negative except for the condition of the skin. The eyes, ears, nose, throat, heart and lungs were apparently normal, and the liver and spleen were not palpable.

The entire eruption was confined to the lower extremities. The oldest lesion, which was situated on the lateral surface of the right ankle, was a sharply defined oval plaque, which measured 5 by 3.5 cm. It was scleroderma-like in consistency and covered by thin smooth epidermis, which appeared shiny and gave the impression of being atrophic. The yellowish violet in the central portion of the lesion deepened to a darker hue as the periphery was reached. Minute tortuous blood vessels passed through the thin surface covering.

The second lesion was a round plaque 2 cm. in diameter, located on the posterolateral surface of the calf of the right leg. The details of this lesion were identical with those of the other plaque.

The two newest lesions, situated on the dorsum of each foot, measured 1.5 cm. in diameter, were pink rather than violet, and were raised in barely perceptible manner above the surface or the surrounding skin. These lesions were less firm than the older ones and the atrophic, shiny appearance of the latter was lacking.

Laboratory and Metabolic Data.—Urinalysis showed a specific gravity of 1.030, an acid reaction to litmus and an absence of albumin. The qualitative examination of the urine for sugar, Benedict's solution being used, was strongly positive on several occasions.

The routine examination of the blood showed: hemoglobin, 81 per cent (Sahli); leukocytes, 7,150; neutrophils, 46 per cent; eosinophils, 3 per cent; monocytes, 1 per cent, and lymphocytes, 50 per cent.

The Kolmer, Wassermann, and Kline blood tests were negative. The fasting blood sugar was 220 milligrams per hundred cubic centimeters (method of Folin). Other examinations of the blood plasma (method of Bloor) showed: total cholesterin, 233 mg. per hundred cubic centimeters of plasma; phosphatide (lecithin), 178 mg., and fatty acids, 428 mg.

Microscopic Changes.—The biopsy was taken with a punch from the oldest lesion on the right ankle and was fixed in 10 per cent solution of formaldehyde. Frozen sections were made from part of the tissue and the remainder was embedded in paraffin and sectioned in the usual manner. We also had the privilege of examining the histologic sections from both of the cases of Drs. Zeisler and Caro.

The sections stained with hematoxylin and eosin showed a slight hyperkeratotic scale. All the layers of the epidermis were present. The basal layer was intact, although there was a definite but irregular increase of pigmentation. Aside from this, the epidermis was essentially normal.

Throughout the entire corium, the striking feature was the diffuse but patchy infiltrate of localized collections of cells. It was arranged predominantly about the vessels but also pushed the collagen bundles aside, completely replacing them only in small areas. The collagen bundles were of irregular size and on cross section appeared to be swollen, but the usual architecture and nuclei were present throughout, except in the areas of heaviest infiltration. With higher magnification, the infiltrate was seen to be made up of lymphocytes and fibroblasts. There were no plasma cells, giant cells, or polymorphonuclear leukocytes. One gained the impression, from an examination of the infiltrate, that the different foci of inflammation were of different ages. In certain areas the infiltrate consisted entirely of lymphocytes, while in other areas there was a preponderance of fibroblasts, indicating an attempt at repair.

On a complete survey of the sections, necrotic areas were found in which the collagen appeared pale, homogenized and without nuclei. In and about these areas were the heaviest collections of lymphocytes and fibroblasts. They represented the necrobiotic foci described by Urbach and in almost all of them vessels were seen either in longitudinal or cross section. When the vessels were present, the intima was definitely swollen and proliferated, even to the point of occlusion of the lumen. However, no massive areas of necrosis were observed in any of the sections.

The preparations stained by the van Gieson method showed conclusively that the areas of necrobiosis were dispersed among the collagen bundles and at their expense. In the areas of infiltration the collagen was destroyed and had been replaced by the cells, but between the foci the collagen appeared to be practically normal.

Sections prepared by Weigert's method showed only fragments of elastic tissue throughout the entire corium, and they were completely lacking in the necrobiotic foci.

The results of microscopic examination in this case are in accord with those reported by Oppenheim, Urbach and Balbi.

In our case, from a superficial survey of the formaldehyde-fixed frozen sections, which were stained with sudan III and counterstained with hematoxylin solution, one could readily observe that the heaviest sudanophilic foci coincided with the necrobiotic areas and that they showed a staining reaction which was definitely different from that of the neutral fat of the subcutaneous tissue. Whereas the latter appeared a brilliant orange-red, the lipoids in the necrobiotic masses assumed a dull brown. The lipoid containing tissue was more dense in the center of these masses and gradually faded into the surrounding tissues.

Under higher magnification, both intracellular and extracellular lipoid deposits were seen, although the extracellular accumulations were relatively more massive and consisted of much larger globules than those seen within the cells. The extracellular lipoid was not only seen in the necrobiotic foci but was scattered diffusely throughout the corium as isolated fine droplets occurring between the connective tissue fibers. The intracellular lipoid was contained in certain large fibroblastic cells, which seemed to be filled to overflowing, and numerous droplets of minute size that were stained with sudan could be seen about these cells. Some of the vessels in the necrobiotic foci, as well as in the infiltrated areas about the sweat glands, showed fatty substances in the vessel walls.

The collagen bundles in some of the sections appeared to be swollen and impregnated with tiny droplets of lipoid, so that the entire bundle was stained a rusty brown.

CASE 2.—*History.*—M. H., a woman, aged 48, stated that she had diabetes mellitus since May 1932. The condition was discovered during a period of hospitalization for influenza. She was not treated until March 1933, when she became weak and sugar was discovered in the urine. At this time a physician outlined a diet and recommended the injection of 10 units of insulin twice daily. In November 1933 she injured the small toe of the right foot, while attempting to remove some dead skin. Soon afterward the toe became swollen and she was unable to wear a shoe. She attempted to reduce the swelling by means of a hot flaxseed poultice, causing several bullae on the dorsum of the right foot. Neither the original injury on the toe nor the bullae healed during the following six weeks. The patient came to the University Hospital for advice.

She related at this time that her mother had died of diabetes and that her husband and one child were living and well.

Examination.—At the time of admission, Jan. 8, 1934, the patient was well developed and in good health except for the present complaint. The heart, lungs and other internal viscera were apparently normal.

On the dorsum of the right foot there were five superficial ulcers. The largest one was oval, measuring 3 by 6 cm., and was surrounded by a deep violet zone 2 cm. in width due to hemorrhage beneath the surface. The other lesions were identical except for size. Two were situated at the level of the malleoli and two were at the base of the toes. All were about 1 to 2 cm. in diameter and appeared as bullae from which

Fig. 1 (case 1).—Lesion of three years' duration in a girl, aged 10 years.

the tops had been removed. The right small toe showed an area of granulation tissue 2 mm. in diameter on the lateral and medial surfaces. The left leg and foot were normal.

Laboratory Data.—The urine at the time of admission showed a strongly positive reaction for sugar. The blood showed: hemoglobin, 90 per cent; leukocytes, 8,300; polymorphonuclears, 71 per cent; lymphocytes, 25 per cent; monocytes, 3 per cent; basophils, 1 per cent.

The Wassermann and Kline tests were negative. The fasting blood sugar was 176 mg. per hundred cubic centimeters, and the fasting blood cholesterin was 181.5 mg. per hundred cubic centimeters.

Roentgen examination of the right foot showed an osteomyelitis involving the outer portion of the first and terminal phalanges of the right small toe. There was also a sclerosis of some of the vessels of the right leg and foot.

Progress.—After treatment for two weeks with antiseptic wet compresses the toe, as well as the ulcerations on the dorsum of the foot and on the toe, healed. At this time the lesions assumed the typical characteristics of necrobiosis lipoidica diabeticorum. All were similar except in size, which varied from 1 to 7.5 cm. Each lesion corresponded exactly to the site of previous ulceration. The largest, which was situated near the external malleolus, was somewhat irregular but roughly oval. It measured 5 by 7.5 cm. and extended medially from the malleolus to a point about 2 cm. to the right of the midline. There were two other lesions on the dorsal surface of the ankle at the level of a line drawn between the two malleoli. Both were oval and were 3 by 2 and 4 by 3 cm. in size, the long axes being longitudinal. The two other lesions were located near the base of the toes and were 1 and 2 cm. in diameter.

All the lesions were waxy plaques, of firm consistency, and sharply demarcated from the surrounding normal skin. The color of the three largest lesions was dark purple, deepest in the center and gradually becoming lighter and somewhat yellow toward the periphery. The purple of the plaques was not uniform over the surface but interspersed by yellow foci, which were irregular in size and shape. The largest lesion was capped by a thin white scale. No telangiectatic vessels were observed.

The two smaller lesions at the base of the toes were appreciably lighter in color than the three lesions previously mentioned. They were similar in other features. The central portions were violet and appeared to be stippled with yellow. The surfaces were glistening and smooth and there were no scales.

A biopsy was taken from the largest lesion and the microscopic features were found to be essentially the same as those described in the first case.

Sections from both of our cases of necrobiosis were treated with the tinctorial agents as outlined in table 4. The staining reactions were identical with those reported by Urbach and Balbi, and we do not deem a detailed description necessary.

PATHOGENESIS

The pathogenesis of necrobiosis lipoidica diabeticorum has been the cause of controversy and is still not entirely settled. Oppenheim was chiefly concerned with the fact that this cutaneous finding in diabetes was a clinical entity and on the grounds of his observations was inclined to consider as the basis for the disease a fatty degeneration of the connective tissues, such as Kreibich described in sailors' skin and cutis

Fig. 2 (case 2).—Lesion present three months in a woman, aged 48.

rhomboidalis nuchae. He emphasized the fact that the microscopic changes were entirely different from those of xanthoma diabeticorum, for there was a complete absence of xanthoma and giant cells.

In his publication and discussions before medical societies, Oppenheim maintained that the degeneration was brought about by circulating toxic substances which were an accompaniment of the diabetes and which

by their local action caused a colloidal-chemical change in the tissues. Although his histologic studies showed no amyloid, colloid, hyaline or mucinous degenerations, he deducted from his study of the sections stained by the van Gieson method that there was some specific change in the connective tissue. In sections stained with sudan III he found intracellular and extracellular lipoid droplets.

Urbach considered the condition to be a necrobiosis of the connective tissue followed by an imbibition of lipoids. He stated, in objection to Oppenheim's views, that the lipoid degeneration described by Kreibich about twenty years ago was in no way analogous to the process that occurred in necrobiosis lipoidica diabeticorum. In the former instance the sudanophilia that Kreibich found was limited exclusively to the swollen, fragmented elastic fibers, while in the latter condition the chief changes appeared in the connective tissue, with the elastic fibers for the most part completely lacking in the necrobiotic areas.

As a further objection to the theory of local degeneration as an explanation of the pathogenesis, Urbach

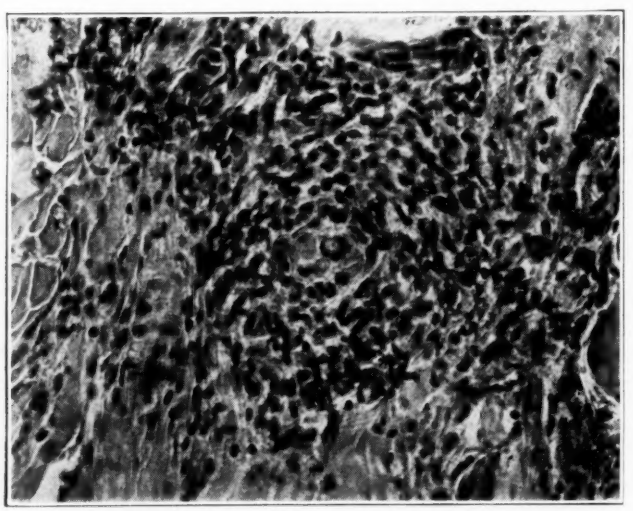

Fig. 3.—A necrobiotic focus surrounding a blood vessel found at biopsy in case 1.

cited the belief, which is prevalent among pathologists at the present time (von Gierke in Aschoff), that it is improbable but not indisputable that fat can originate from cell protein. The accepted view is that the lipoid in such degenerations comes from the blood or lymph streams and not from the cells themselves.

In support of his own ideas regarding the pathogenesis, Urbach claims that the arrangement of the lipoid droplets in chains and clusters makes it appear probable that they come from the blood stream, and that it is the current belief that all necrotic tissue masses of the type found in necrobiosis lipoidica diabeticorum attract substances circulating in the blood. Such a state exists in diabetes, as is illustrated by the finding of hyperlipemia. Hence the necrotic masses take up the circulating fatty substances.

Urbach supposed that certain toxins due to diabetes caused a severe disturbance in the vessels of the corium leading to necrobiosis, as evidenced by loss of cells and nuclei, homogenization of the connective tissue and the deposition of calcium salts. These primarily necrobiotic tissues then imbibed lipoid substances, which are so often in the blood of diabetic subjects.

After a fair consideration of both views and an excellent, painstaking, microchemical investigation, Balbi felt that the conception of Urbach was correct. At first glance, because of the mild reaction of the tissues, he was undecided as to whether or not the process was one of necrobiosis and imbibition or one of degeneration. He believed that the nuclear alterations, the disappearance of cells, the restriction of the vessel lumens, due to thrombosis, and the homogenization of the connective tissue was indicative of necrobiosis, while the negative reactions for amyloid, colloid, hyalin and mucin, which Oppenheim obtained, were against degeneration. For the same reasons that Urbach had given he concurred in the view that degeneration, in the sense that Kreibich uses the term in sailors' skin, could not be applied to this disease. Balbi found that most of the lipoid deposits were extracellular, and the few cells containing sudanophilic inclusions were histiocytic fibrocytes of normal appearance. They were not degenerated, as would be expected if the process was one of lipoid degeneration. He thought that the arrangement of the droplets in clusters and striae did not carry the significance that Urbach attributed to it.

In some sections, however, he observed masses of lipoid within thrombosed vessels and rich perivascular deposits around others, strongly indicating that the lipoid was blood borne and deposited in greatest quantities in the immediate vicinity of the vessels, gradually invading areas farther distant. In many places he saw degeneration of the vessel wall caused, he believed, by toxic materials circulating in the blood other than the lipoid.

He thought that the clinical facts coincided well with the histologic observations. The surface telangiectasia was explained as a compensatory phenomenon secondary to disturbances in the deeper vessels. The brown discoloration of the lesions was due to iron pigment deposited in the upper part of the corium, and the yellow tint was given by the lipoids present in the lesions. He felt that the prolonged course of the disease was due to the torpidity of reaction that characterizes diabetic tissues. In cases such as Balbi's, in which the necrobiosis is more intense, the foci may liquefy and cause ulcerating lesions. In the ordinary, milder cases the peripheral circulation maintains the integrity of the epidermis.

COMMENT

After a critical evaluation of the literature and a prolonged study of our cases we attempted to arrive at a conclusion regarding this condition. We felt that an attempt should be made to aline a new dermatosis that could be attributed directly to the diabetic process with the two best known cutaneous complications of diabetes. These are xanthoma and gangrene. Furthermore, we were convinced that the absence of xanthoma and giant cells definitely excluded the possibility that the dermatosis is an atypical form of xanthoma diabeticorum.

There is no question but that trauma played an important rôle in the development of the lesions in our two patients. Since our attention has been attracted to necrobiosis lipoidica diabeticorum, we have minutely examined the skin, especially of the lower extremities, of every patient in the diabetic service who showed any cutaneous abnormality. We have seen lesions which in their evolution passed through a phase that

was identical in appearance with the lesions in necrobiosis lipoidica diabeticorum. In some of these patients the process advanced to a frank gangrene, while in others the lesions disappeared without a trace. We concluded, therefore, that the disease was more closely related to gangrene than to any other integumentary process in diabetes.

We familiarized ourselves with the opinions of various authorities regarding the pathogenesis of diabetic gangrene and were surprised to learn that in spite of the vast literature on diabetes produced in the past decade there had been little study of gangrene.

We made biopsies at various distances from gangrenous areas in diabetic patients in an effort to ascertain whether or not the tissues adjacent to diabetic gangrene showed necrobiotic foci, and we felt that there was sufficient similarity to consider the processes closely related, the variation being mostly one of degree. We also cut sections from tissue surrounding gangrenous areas in patients who did not have diabetes. We especially searched for sudanophilic substances and found them in varying amounts. It was our opinion that in diabetic patients with a hyperlipemia the amount of fatty substance found in the necrotic areas was greater than in nondiabetic patients, although lipoids were present in both. We were convinced that necrobiosis lipoidica diabeticorum was closely allied to gangrene, and that the degree of trauma, the anatomic location, and the severity of the underlying diabetes were the factors on which the course depended.

The composition of the lipoids found in this process is undoubtedly of interest to biologic chemists. However, we believe that the clinical lesions could be identical regardless of the predominating type of lipoid found and, furthermore, that the imbibition of lipoid was preceded by a primary vascular disturbance. The size and location of the vessels involved must govern the extent of the tissues injured, and this in turn influences the amount of fat deposited. Other factors, such as the relative amounts of the various lipoids in the blood, must play a rôle in determining the identity of the substances that are present in the tissues.

CONCLUSIONS

1. Necrobiosis lipoidica diabeticorum is a definite entity that is more distinctive clinically than pathologically.

2. The process is more closely allied to diabetic gangrene than to diabetic xanthoma.

Disturbances of Nutrition.—Although pernicious anemia, pellagra, sprue, possibly the idiopathic steatorrhea or celiac disease, and even hunger edema possess individual characteristics that give them the distinction of clinical and etiological entities, there are considerable numbers of patients who suffer from profound disturbances of nutrition in which the clinical picture is not so clear cut, and in which, in addition to malnutrition, several features peculiar to two or more of the above diseases may be combined in a most confusing manner. The variations in symptoms and signs may be numerous. There may be great loss of weight, anemia either of the microcytic or macrocytic type, persistent diarrhea, glossitis, steatorrhea, skin eruptions, abnormalities in mineral metabolism and alterations in the exchange of fluids, so that in some patients there is dehydration of the subcutaneous tissues while in others such extensive edema that it becomes one of the predominant features of the illness.—Longcope, W. T.: The Importance of Disturbances in Nutrition in Edematous States, *New England J. Med.* **210**:1243 (June 14) 1934.

ELECTROSURGICAL OBLITERATION OF THE GALLBLADDER

(SEVENTY-FIVE CONSECUTIVE, UNSELECTED, CASES WITHOUT MORTALITY)

MAX THOREK, M.D.
CHICAGO

Although standard methods of cholecystectomy yield in competent hands an immediate operative mortality, in selected uncomplicated cases, of 1 or 2 per cent, no such happy results are recorded in hands not especially trained, particularly in complicated cases and in patients over 40 years of age. The global mortality in surgery of the gallbladder in complicated cases remains too high. The statistics of Enderlen and Hotz,[1] based on 12,144 cases of biliary tract disease treated surgically by various competent operators, gave an immediate operative (global) mortality of 9.28 per cent.

Fig. 1.—Effects of forced carbonization on wall of inflamed gallbladder: (1) eschar; (2) Rokitansky-Aschoff sinus in transverse section; (3) muscularis; (4) serosa. An excellent state of preservation characterizes the layers of gallbladder past the mucosa. Slightly reduced from a photomicrograph with a magnification of 85 diameters.

Verbrycke,[2] quoting Lyons, states that in a review of a series of his cases in which operation was performed by first class surgeons the immediate mortality was 10 per cent, and there were serious hospital complications in 33 per cent. Table 1 is of interest in this connection. The greater mortality in males as compared with females is striking.

Scalpel surgery of the gallbladder, therefore, must not be judged by the brilliant results of a few exceptional operators but by the general results of the average surgeon (who often does not report his results). These may in many instances give immediate mortalities of 20 or 30 per cent, or even higher.

---

1. Enderlen and Hotz: Behandlung des Gallensteinleidens, Klin. Wchnschr. **2**: 648 (April 2) 1923.

2. (*a*) Verbrycke, J. R.: Gallbladder Operation Mortality, South. M. J. **22**: 452 (May) 1929; (*b*) M. J. & Rec. **126**: 705 (Dec. 21) 1927.

CAUSES OF DEATH AND COMPLICATIONS

The most frequent causes of death and complications following scalpel surgery of the biliary tract are peritonitis, shock, hemorrhage, pulmonary embolus, pneumonia and cholemia. The first four are by far the most common and seem to be more or less inseparable from any form of scalpel surgery. In most instances they are directly traceable to biliary seepage, particularly from the bed of the gallbladder, which contains not only bile capillaries (often dilated) but also bile ducts of considerable caliber in from 15 to 25 per cent of individuals. These are injured during the course of cholecystectomy, and bile seepage results. Furthermore, it is not always possible to cover the denuded surface of the liver bed with peritoneum in a classic cholecystectomy. Bile, sterile or not, has been proved to act as a true chemical poison in the peritoneal cavity. Drainage invites bile seepage. Bakeš [3] observed bile issuing from the wound 230 times in 346 cases of simple cholecystectomy. He and many other surgeons were impressed by the postoperative appearance of bile in the dressings "in nearly all the cases."

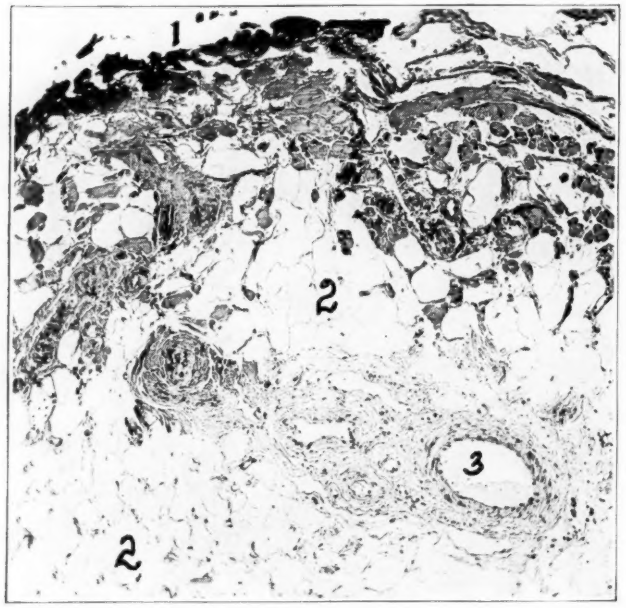

Fig. 2.—Effects of electrocoagulation on diseased gallbladder (chronic cholecystitis): (1) destroyed mucous membrane; (2) vacuolated spaces and homogeneous islands of tissue the result of tissue dissolution and coagulation; (3) blood vessel empty with small coagulum in lumen. All layers are affected in the coagulating process. Reduced from a photomicrograph with a magnification of 85 diameters.

TABLE 1.—*Mortality Statistics in Gallbladder Operations from 1908 to 1932*

Surgeon	Number of Cases	Year	Mortality, per Cent
1. Cotte, M.	Not given	1908	Males 33 Females 18
2. Davis, B. B.	563	1921	8.17
3. Enderlen and Hotz.	12,144	1923	9.28
4. Brentano	280	1923	Males 36.78 Females 17.29
5. Villard	131 cholecystostomies	1925	Males 34 Females 21
6. Duclos	Global mortality	1926	Males 36 Females 23
7. Boutin	18 cases complicated by perforation	1927	Males 71.43 Females 27.21
8. Davis, B. B.[4]	160 cases	1928	3.75
9. Cattell, R. B.: Ann. Surg. **89**: 932, (June) 1929	311 cases (complications, 55 cases)	1929	Males 9.1 Females 6.8
10. Sanders, R. L.: Ann. Surg. **92**: 374, (Sept.) 1930	18 series of cases garnered from the literature totaling 60 cases	1930	15
11. Verbrycke [2a]	169 patients operated on by 23 surgeons; 1 surgeon in this series had 10 cases; another surgeon in this series had 20 cases	1927	8.8 28.5 15
12. Tixier, Clavel and Chabannes	11 males 149 females	1932	Males 36.38 Females 16
13. Thorek	649 cases 138 males 511 females	1910 to 1932	Males 16.8 Females 9.4

DANGERS OF DRAINAGE IN CHOLECYSTECTOMY

The dangers and evils of drainage are well known. Briefly, they are bile seepage (biliary peritonitis), hemorrhage (arrosion of vessels), cardiac embarrassment (particularly in the aged), acute dilatation of the stomach, pneumonia (usually right lobar), fistulas, hernias, evisceration, stenosing sequelae, and the like.

The profession is still too much under the thraldom of Kehr's famous dictum that "proper drainage is half a successful gallbladder operation." Nevertheless, it appears in the light of recent reports that drainage might also be considered as half an unsuccessful operation. Davis [4] also called attention to the evils of drainage. There seems to be no doubt that, *ceteris paribus*, a gallbladder operation without drainage has a better chance of success than if drained. Many of the dangers are eliminated by omitting drains. Theoretically, a dry field and a tightly closed abdomen are ideal, but a scalpel cholecystectomy with completely satisfactory peritonization cannot always be accomplished.

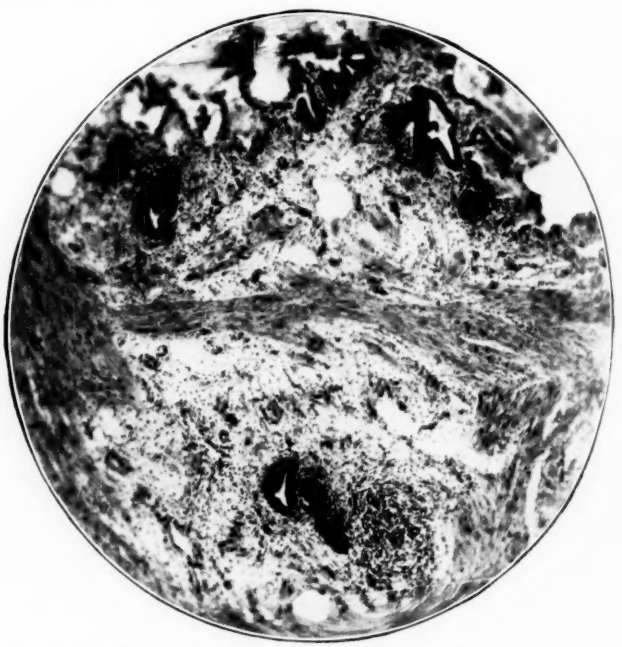

Fig. 3.—Mrs. A. M. Chronic cholecystitis eight months after (mucoclasis) electrocarbonization of the mucosa. Note remnants of Rokitansky-Aschoff sinuses and diffuse round cell infiltration. Below in center of field an aggregation of polymorphonuclear leukocytes. Reduced from a photomicrograph with a magnification of 105 diameters. Persistence of symptoms. Relieved by total obliteration of gallbladder wall by electrocoagulation.

In certain conditions drainage is a necessity; namely, in obstruction in the common bile duct, icterus, progres-

3. Bakeš, J.: Zentralbl. f. Chir. **55**: 1858 (July 28) 1928.
4. Davis, B. B.: Operative Mortality and End Results in Gallbladder Surgery, Ann. Surg. **87**: 735 (May) 1928.

sive septic cholangeitides, inability to peritonize the cystic duct and gallbladder bed, and the like.

SOURCES OF GALLBLADDER INFECTION

Patey and Whitby summarized their observations as follows: 1. Experimentally, the cystic artery is the easiest route by which organisms can reach the gallbladder. 2. The liver is not an efficient bacterial filter. Bacterial emboli may therefore reach the gallbladder

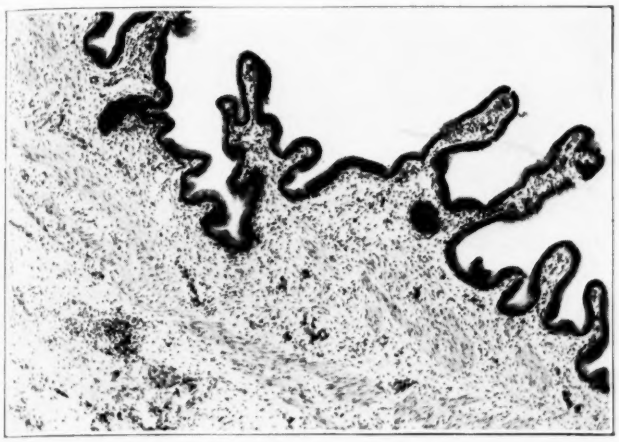

Fig. 4.—Mrs. M. L. Chronic cholecystitis nine months after electrocarbonization of mucous membrane of gallbladder (mucoclasis). No relief of symptoms. Regeneration of mucous membrane and persistence of inflammation (round cell infiltration, and the like). Reduced from a photomicrograph with a magnification of 220 diameters. Relieved by electrocoagulation of entire gallbladder wall.

as easily from a portal focus as from a systemic one. 3. There is evidence that lymphatic spread from the liver to the gallbladder is a probable route. 4. The possibility of infection of the gallbladder by bile descending from the liver cannot be dismissed. Ascending infection from the duodenum is, however, probably extremely rare. Evarts Graham,[5] commenting on this, states that Patey and Whitby are wrong in their assumption that there is no evidence of a lymph flow from the liver to the gallbladder. Sudler, in Mall's laboratory at Johns Hopkins, more than thirty years ago demonstrated this flow in the pig. It is true, however, that in 1927 Winkenwerder, also of Johns Hopkins, was unable to find such a flow experimentally in the cat.

The studies of Andrews and Hrdina[6] have shown that infection of the gallbladder occurs by direct extension from the liver. They have produced hepatogenous cholecystitis by creating biliary stasis after ligating the cystic duct in dogs.

It is conceded that the gallbladder is only a part sharing in an infectious process in the biliary apparatus. Clinical results following its removal, however, seem to indicate that it often is the main focus, and, while the liver is usually amply fortified to cope with invading micro-organisms, the gallbladder seems to be a *locus minoris resistentiae*, which succumbs to the destructive influence of pathogenic micro-organisms. The best drainage of the biliary system is that which follows continuously after cholecystectomy through the common duct into the duodenum.

HOW CAN THE EVILS OF DRAINAGE BE REMEDIED?

The logical answer seems to be (*a*) by omitting drains if possible, (*b*) by so protecting the gallbladder bed that no bile leakage results, and (*c*) by eliminating the infected gallbladder. All these can be effectually accomplished by a procedure to be described.

The raw surface resulting from a dissection of the gallbladder from its bed is the *bête noire* in cholecystectomy. Injury to the gallbladder bed and the resultant division of bile passages nearly always result in biliary seepage, and not all gallbladder beds can be covered with peritoneum after classic cholecystectomy. Bile seepage will not result from the divided cystic duct when it is thoroughly peritonized with serosa of the hepatoduodenal ligament. Such being the case, elimination of seepage from the gallbladder bed seems to be the keynote of the problem. I have shown[7] that this can be effected (1) by electrocoagulation of the entire thickness of the gallbladder wall, and even the liver bed. Such procedure results in an occlusion (by coalescence) of the capillaries and bile ducts and by formation of a dry, sterile layer of inert tissue; (2) by covering the electrocoagulated area with the ligamentum falciforme hepatis for further protection, and (3) by omitting drainage.

EVOLUTION OF THE METHOD

Pribram[8] states that surgeons preceding him practiced extensive partial cauterization of the mucous membrane of the gallbladder with the Paquelin burner for purposes of avoiding fistulas. He extended such "charring" or "burning" to larger areas of the gallbladder mucosa and called this procedure mucoclasis. As recently as 1933[9] he still speaks of "carbonization of the mucosa of the gallbladder." I have shown elsewhere[7] that such cauterization of the mucous membrane of the gallbladder (mucoclasis) is insufficient to eliminate the gallbladder and eradicate disease. A charred

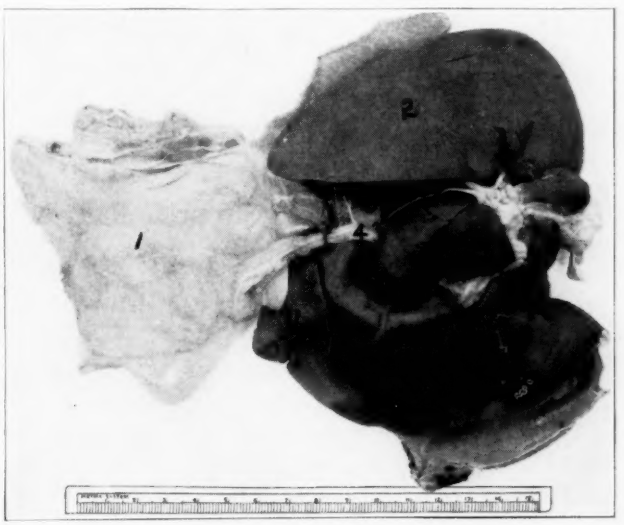

Fig. 5.—Results of cholecystelectrocoagulectomy with falciform ligament implantation in a police dog. Specimen removed seven weeks after operation: (1) falciform ligament; (2) lobe of liver; (3) gallbladder bed; (4) ligated cystic duct. Fine adhesions between falciform ligament and gallbladder bed; firm union of lower end of falciform ligament with stump of ligated cystic duct.

eschar resulting from destruction of the mucous membrane acts, as do all eschars resulting from burns, as an impervious loosely attached foreign substance carry-

5. Graham, Evarts: General Surgery (Practical Medicine Series), 1933, p. 611.
6. Andrews, Edmund, and Hrdina, Leo: Hematogenous Cholecystitis, Arch. Surg. **23**: 201-204 (Aug.) 1931.
7. Thorek, Max: Cholecystelectrocoagulectomy, Illinois M. J. **64**: 425 (Nov.) 1933.
8. Pribram, B. O.: Fortschritte in der chirurgischen Behandlung des Gallensteinleidens, Med. Klin. **24**: 1187 (Aug. 3) 1928; Ztschr. f. Chir. **56**: 1054 (April 27) 1929; ibid. Zentralbl. f. Chir. **55**: 775 (March 31) 1928.
9. Pribram, B. O.: Compt. rend. Cong. internat., lithiase biliaire, Paris, G. Doin, 1933.

ing with it the potential danger of partial or total detachment, which may result in hemorrhage, thrombosis and possible embolism. Albertin [10] has shown that Pribram lost nine patients in a series of 310 cases in which mucoclasis was employed. Coupled with this drawback there is still another, more important, factor, which is that the incomplete destruction of the gallbladder wall by carbonization defeats its purpose by

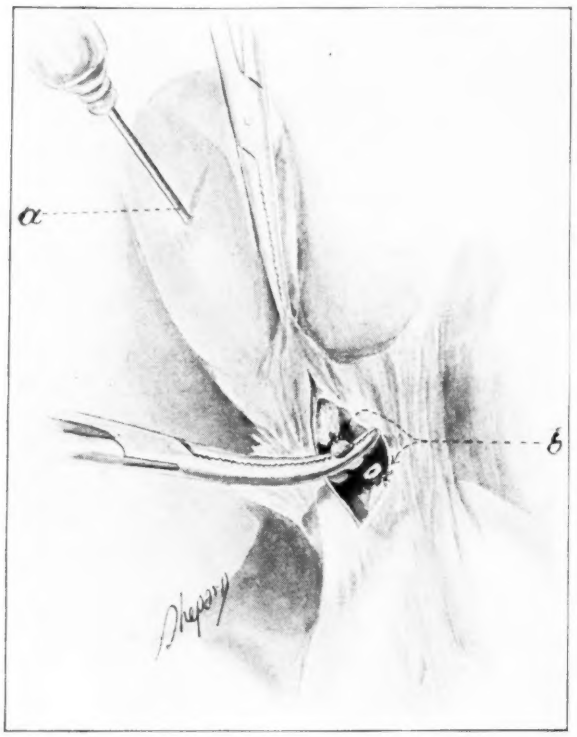

Fig. 6.—*a*, aspiration of gallbladder contents; *b*, ligation and division of cystic duct.

permitting micro-organisms to remain dormant in the Rokitansky-Aschoff sinuses. Carbonization is a superficial process. Electrocoagulation, on the other hand, permits destruction of tissue to any depth desired, simultaneously sealing lymphatics, blood vessels and biliary canaliculi (figs. 1 and 2). It leaves a dry, sterile, impervious surface tending to agglutination with serous surfaces. To be successful, destruction of the gallbladder wall must be thorough and extend through the entire thickness of the wall and as far into the tissues of the gallblader bed as conditions warrant.

Graham [11] emphasizes that "very often the dependent layers of the gallbladder, especially the subserous layer next to the peritoneum, show the most severe inflammatory changes while the epithelium may look intact in the most severe grades of inflammation." The studies of Rosenow,[12] Brown,[13] Illingworth,[14] Wilkie [15] and others substantiate this view.

Figures 3 and 4 are from two of a series of cases in which only destruction of the mucous membrane of the gallbladder was done. They prove the inefficacy of destruction of the mucosa in gallbladder disease. In both instances, mucoclasis was done without any clinical improvement. On the contrary, the condition of the patients became aggravated. Attempts at regeneration of the mucous membrane with persistence of inflammation in the deeper layers of the gallbladder wall and liver bed are the striking microscopic changes. Relaparotomy and cholecystelectrocoagulectomy gave relief in both cases. These cases are cited as examples of similar experiences in the rest of a series in which only the mucous membrane was attacked. Failures with subserous enucleation of the gallbladder and with classic cholecystectomy led to the evolution of total electrocoagulation of the gallbladder wall and the liver bed, with superimposition of the falciform ligament and the omission of drainage.

RATIONALE OF THE PROCEDURE

In patients seeking relief from symptoms of gallbladder disease, the surgeon often finds the gallbladder macroscopically normal at operation, but cholecystectomy frequently relieves these patients of their complaints. Histologically such gallbladders often contain diverticula, foci of infection, intramural abscesses and intramural calculi. The mucosal infoldings (Rokitansky-Aschoff sinuses) described by Luschka in 1863 and later by Aschoff in 1905 frequently harbor cholesterol concretions (stones); islands of round cells surrounding these diverticular outpouchings are commonly observed. Schmiedheiny [16] concludes that "in all forms of cholecystitis the so-called liver bed is almost always affected." Here the pathologic processes transgress

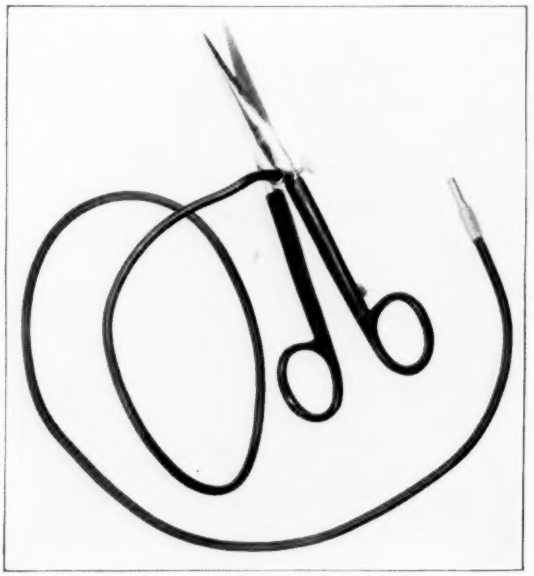

Fig. 7.—Diatherm scissors for ablation of gallbladder wall and simultaneous hemostasis.

the tunica fibrosa and encroach on the subserosa and serosa, and frequently invade the contiguous liver parenchyma, particularly in the more serious forms of gallbladder disease.

Electrocoagulation provides an efficient method of eradicating such foci. As shown by Zschau,[17] the electrocoagulating current does not cause thrombosis in the

10. Albertin, M. R.: Lyon chir. **30:** 207 (March-April) 1933.
11. Graham, E. A.: Hepatitis, a Constant Accompaniment of Cholecystitis, Surg., Gynec. & Obst. **26:** 521 (May) 1918.
12. Rosenow, E. C.: The Etiology of Cholecystitis and Gallstones and Their Production by the Intravenous Injection of Bacteria, J. Infect. Dis. **19:** 527 (Oct.) 1916.
13. Brown, R. O.: A Study of the Etiology of Cholecystitis and Its Production by the Injection of Streptococci, Arch. Int. Med. **23:** 185 (Feb.) 1919.
14. Illingworth, C. F. W.: Types of Gallbladder Infection: A Study of 100 Operated Cases, Brit. J. Surg. **15:** 221 (Oct.) 1927.
15. Wilkie, A. L.: Significance of Hepatitis in Relation to Cholecystitis: An Experimental Study, Brit. J. Surg. **16:** 214 (Oct.) 1928.
16. Schmiedheiny, Marie Louise: Arch. f. klin. Chir. **140:** 548, 1927-1928.
17. Zschau, cited by Ellis.[18]

blood capillaries and smaller vessels. The possibility of embolus is thus greatly minimized. When a coagulated area is peritonized there results a solid, more or less homogeneous, dehydrated, hyalinized mass that acts as a sterile tampon in the bed of the gallbladder, and the tissues of such electrocoagulated areas tend to prompt healing by encapsulation and final absorption. Kuntzen and Vogel have shown that electrocoagulated areas of

Fig. 8.—Redundant portion of gallbladder removed. Remaining portion of gallbladder wall attached to gallbladder bed electrocoagulated.

the liver in guinea-pigs and dogs tend to prompt adhesions between the omentum, the covering of the intestine, or any contiguous serosal surface. Adhesions thus formed were dense at the height of the reparative process but later tended to regress, and after some months "only a few fine strands connected the coagulated area with the omentum." I had occasion to substantiate these observations in some of my experimental studies (fig. 5) on the dog and Macacus rhesus.

Electrocoagulation produces entirely different effects than thermocauterization and electrocauterization. Electrocoagulated areas on the surface tend to extrusion, while in the abdomen there result agglutination, encapsulation and absorption.

Electrocoagulation of the liver results in definite tissue reactions. A zone of necrosis is observed at the point of contact with the electrode. This is limited by a line of demarcation consisting of leukocytes. Beyond this, another, less extensive, zone of necrobiotic tissue is observed, which is again limited by a zone of leukocytes and wandering cells. From this layer encapsulation proceeds, and from within the protective connective tissue capsule absorption of the coagulated tissue takes place. Hemostasis as a result of diathermy does not take place by thrombosis but by collapse and fusion of the walls of the vessels.[18] According to Aschoff, coagulation thrombosis is in sharp contradistinction to true thrombus formation. Secondary hemorrhage does not occur because of the pressure exerted by the sequestrated, coagulated mass against the connective tissue capsule.

18. Ellis, J. D.: Principles and Practice of Physical Therapy, Hagerstown, Md., W. F. Prior, 1932, p. 14.

OPERATIVE TECHNIC

The operative technic has been fully described elsewhere.[7] Briefly, it is as follows: General or spinal anesthesia (tropacocaine hydrochloride, 10 per cent); ample exposure; mobilization of the falciform ligament; aspiration of the gallbladder contents and exploration

TABLE 2.—*Analysis of Seventy-Five Cases*

Total number of cases	75
Males	2
Females	73
Age of patients—youngest	29 years
oldest	69 years
Average high temperature	100 F.
Average number of days in hospital	14.5

Pathologic conditions found at operation: Acute and chronic cholecystitis, cholelithiasis, hydrops vesicae fellae, empyema of the gallbladder, acute hemorrhagic cholecystitis, hepatitis, adhesions, pancreatitis (chronic)

Postoperative complications: None, except in one case in which a cholecystelectrocoagulectomy was done for gangrenous cholecystitis and cholelithiasis. The sutures were removed on the eleventh day. The wound healed by first intention. On the tenth postoperative day symptoms of bilateral pleurisy with effusion were noted, which cleared up. The patient left the hospital on the twenty-seventh day in good condition

Mortality: None

of the biliary passages; double ligation and division of the cystic duct and artery (fig. 6); removal of the redundant part of the gallbladder wall by special dia-

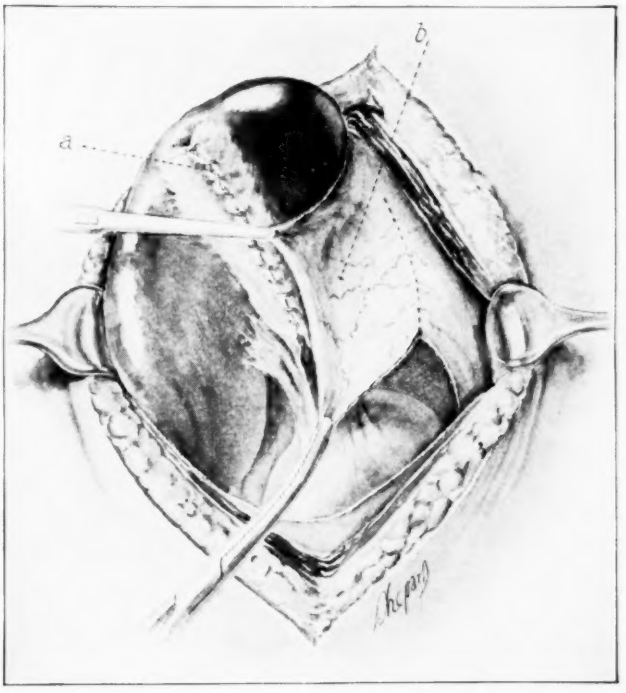

Fig. 9.—*a*, electrocoagulated zone approximated with sutures; *b*, pedicle flap of ligamentum falciforme hepatis ready to be sutured over suture line covering electrocoagulated zone.

therm scissors, during which the branches of the cystic artery coursing in the gallbladder wall are simultaneously coagulated (fig. 7). Only that portion of the wall of the gallbladder is permitted to remain which is attached to its bed. This is slowly electrocoagulated to the depth required (fig. 8).[19] Approximation of the

19. A Model H Fischer apparatus was used in the experimental and clinical work.

edges of the coagulated segment of gallbladder with catgut sutures: The falciform ligament is attached to the coagulated area by sutures previously left long (fig. 9); no drains.

A series of seventy-five patients were operated on by this method, without a death. An analysis of this series is given in table 2.

SUMMARY

Failures and fatalities in classic cholecystectomy are frequently due to bile leakage, as a result of an inability to obliterate and cover the gallbladder bed, which contains bile capillaries and often larger bile ducts, in from 15 to 25 per cent of cases. Drains invite bile seepage. A method is described which effectually seals these openings by electrocoagulation. A sterile, hyaline, dry protective layer is substituted for a raw, unprotected surface. The falciform ligament is superimposed over this area. Drainage is entirely omitted. A series of seventy-five consecutive, unselected cases were thus treated without a fatality.

3920 Lake Shore Drive.

SUPRAPUBIC PROSTATECTOMY WITH IMMEDIATE CLOSURE OF THE BLADDER

IMPROVED METHOD OF POSTOPERATIVE DRAINAGE

H. H. HAYNES, M.D.
CLARKSBURG, W. VA.

The advantages of immediate closure of the bladder are apparent to every one familiar with prostatic surgery, provided the hazards of faulty drainage and complications are not increased.

My experience with eight cases of primary closure, with postoperative drainage by a return flow catheter, would indicate that by this method drainage can be improved and the occurrence of complications materially reduced. This catheter is an original modification of Dr. Chetwood's suprapubic drainage tube designed for retrograde introduction into the urethra.

OPERATIVE PROCEDURE

The usual suprapubic incision is made. When the bladder is opened, suction is used to remove the contents of the distended bladder and thereby avoid unnecessary soiling of the wound. After enucleation of the prostate, complete hemostasis is obtained and the prostatic fossa is obliterated with No. 0 plain catgut. An ordinary catheter used for irrigating and distending the bladder is left in the urethra during the operation. Before the fossa is obliterated, the end of the small intake tube (fig. 1 *B*) of the special drainage catheter is sutured with strong silk or linen to the tip of the catheter introduced before operation (fig. 2 *A*). The urethral catheter is now withdrawn by an assistant and the special catheter, well lubricated, readily follows through the urethra.

When the distal end of the drainage catheter is withdrawn, the assistant removes the intake tube from the main catheter (fig. 1 *A*) through the small oval opening (fig. 1 *D*). The button flap (fig. 1 *C*) is adjusted over the intake tube and fastened in position to prevent leakage of the return flow. The intake tube is then attached to the irrigating apparatus and the return flow tube connected to carry the return flow into a suitable receptacle. The irrigation is now turned on to demonstrate that the drainage catheter is functioning properly.

After obliteration of the prostatic fossa and complete hemostasis, the Pezzer tip of the drainage catheter is drawn snugly into position (figs. 3 and 2 *B*).

The usual suture to obliterate the space of Retzius is now placed but not tied. After this the bladder incision is closed completely with two rows of No. 0 chromic catgut. The first row of sutures should include all the muscularis but not the mucosa and is a continuous lock suture. This row is completely buried by a continuous Cushing right angle suture.

The suture, previously placed to obliterate the space of Retzius, is then tied. This suture is of great importance both in obliterating the space of Retzius and in preventing tension on the bladder incision.

The abdominal wound is closed in the usual manner except that several loops of catgut extending down to the bladder are placed in the lower angle of the incision for drainage of the prevesical space; these are removed on the third day.

Before the patient is removed from the operating table, the catheter is anchored to the penis in the usual manner.

AFTER-TREATMENT

Continuous irrigation, by the drop method, is started before the bladder is completely closed and continued twenty-four hours. On the second day irrigation is done every four hours, and after the second day irrigations morning and evening are usually sufficient. Boric acid solution has been used in these cases. Heat is an important factor in the irrigation but care must be used

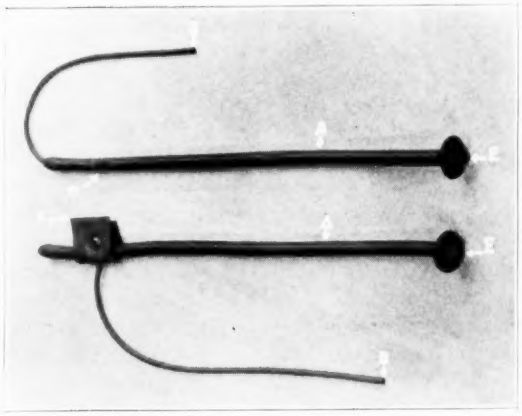

Fig. 1.—Return flow irrigating catheter designed for retrograde introduction: Upper catheter adjusted for introduction; lower catheter adjusted for irrigation and drainage. *A*, main catheter containing intake tube and space for return flow. *B*, intake tube. *C*, button flap to prevent leakage of return flow. *D*, oval opening for bringing intake tube out of main catheter. *E*, Pezzer tip (drainage catheters made by Clay-Adams Company, 25 East Twenty-Sixth Street, New York City).

to avoid burning the patient. Local treatment to the bladder can be used easily through this catheter.

The drainage catheters have been removed from the seventh to the tenth days, and so far as I can see the patients from whom catheters were removed on the seventh day have done as well as those from whom catheters were removed later.

To remove the drainage catheter I start with a steadily increasing pull until the patient shows evidence of discomfort and then complete the withdrawal by a

quick harder pull. None of these patients have had difficulty in voiding following removal of the drainage catheter.

REPORT OF CASES

CASE 1.—J. L. J., aged 61, was admitted, Oct. 17, 1932, and discharged, November 2. Operation was performed October 19, the catheter was removed October 29, and the patient was out of bed October 30. The pathologic diagnosis was hypertrophied prostate.

CASE 2.—T. C., aged 81, was admitted, Jan. 22, 1933, and discharged, February 19. Operation was performed January 31, the catheter was removed February 9, and the patient was out of bed February 13. The pathologic diagnosis was carcinoma of the prostate.

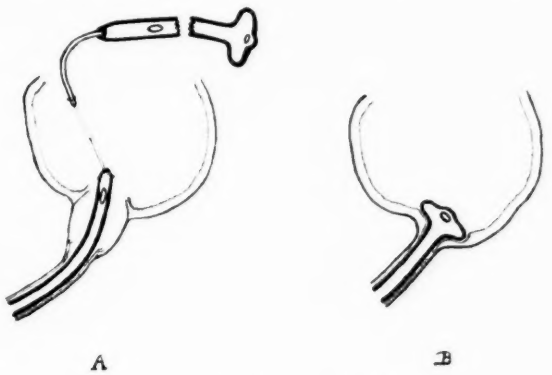

Fig. 2.—Schematic drawing showing *A*, method of retrograde introduction of drainage catheter; *B*, Pezzer tip in position.

CASE 3.—P. F. C., aged 83, was admitted, May 17, 1933, and discharged, June 3. Operation was performed May 20, the catheter was removed May 29, and the patient was out of bed May 31. The pathologic diagnosis was tuberculosis of the prostate.

CASE 4.—W. F. L., aged 77, was admitted, June 20, 1933, and discharged, July 13. Operation was performed June 28, the catheter was removed July 6, and the patient was out of bed July 7. The pathologic diagnosis was benign hypertrophy.

CASE 5.—E. H. C., aged 76, was admitted, Sept. 22, 1933, and discharged, October 9. Operation was performed September 28, the catheter was removed October 5, and the patient was out of bed October 7. The pathologic diagnosis was benign hypertrophy.

CASE 6.—G. B., aged 51, was admitted, Nov. 20, 1933, and discharged, December 14. Operation was performed December 4, the catheter was removed December 11, and the patient was out of bed December 12. The pathologic diagnosis was adenoma of the prostate.

CASE 7.—J. E. C., aged 59, was admitted, Nov. 28, 1933, and discharged, December 29. Operation was performed December 11, the catheter was removed December 20, and the patient was out of bed December 23. The pathologic diagnosis was adenomatous hypertrophy.

CASE 8.—F. U. K., aged 65, was admitted, Jan. 2, 1934, and discharged, January 16. Operation was performed January 6, the catheter was removed January 13, and the patient was out of bed January 14. The pathologic diagnosis was benign hypertrophy.

This is not a series of selected cases. They have been taken in order as they came in a general surgical practice. Case 2 was adenocarcinoma in a man, aged 81, and was an ambulance case. Case 7, in addition to prostatic obstruction, presented toxic goiter, auricular fibrillation (shown by electrocardiography) and cardiac insufficiency with passive congestion. Except for the myocardial condition, the patient could have been discharged on the tenth or eleventh day.

Vasectomy was not performed in any of these cases and epididymitis or other complications did not occur. There was no bladder leakage in any of these cases and all suprapubic wounds were completely healed when the patients were discharged from the hospital.

The patients comprising this series have been communicated with in the last ten days and none of them have had any complications since leaving the hospital; all reported satisfactory results. The report from patient 2 (adenocarcinoma) through his family physician was that he had had no trouble with urination since leaving the hospital.

The average postoperative hospital stay of these patients was fourteen days. Two were discharged on the tenth postoperative day. The average postoperative time for removal of the catheter and for establishing natural micturation was eight and one-fourth days.

Only one of these patients complained of severe postoperative pain, and an investigation showed an obstruction of the return flow tube due to a faulty connection. This pain was immediately relieved when the return flow was put in order. Three of these patients voluntarily stated that at no time following their operation were they as uncomfortable as they had been before.

Evaluation of kidney function, intelligent preoperative care, hemostasis, obliteration of prostatic fossa and careful bladder closure are essential to success.

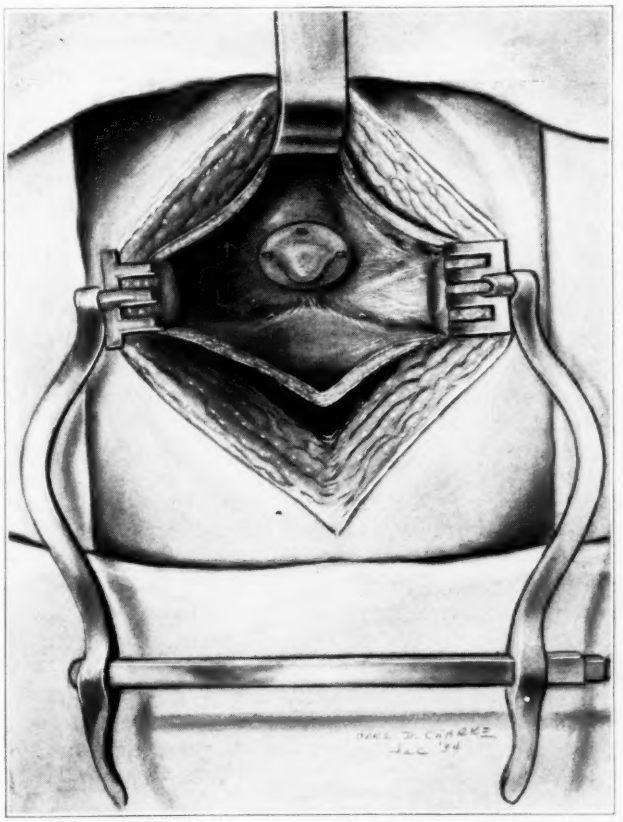

Fig. 3.—Interior of bladder with fossae obliterated and Pezzer tip in position.

All these patients were anesthetized with tribromethanol, supplemented with gas-oxygen or ether when necessary.

ADVANTAGES OF THIS METHOD OF DRAINAGE

First, continuous or intermittent return flow irrigation with any desired solution.

Second, better drainage.

Third, shorter hospitalization.

Fourth, no suture anchorage in the bladder.

Fifth, assistance from Pezzer tip in obliterating prostatic fossa.

Sixth, better anatomic and functional results.

211 Goff Building.

SKIN SENSITIVENESS TO TUBERCULIN IN PRIMARY TUBERCULOSIS

IS ITS DEGREE IN CHILDREN RELATED TO THE EXTENT OF DEMONSTRABLE INTRATHORACIC PATHOLOGIC CHANGES PRESENT?

CHESTER A. STEWART, M.D.

MINNEAPOLIS

The degrees of skin sensitiveness to tuberculin manifested by infected children are found to vary widely when Mantoux or Pirquet tests are applied. It is also a matter of common experience to observe that, on the basis of physical changes and evidences indicative of disease or illness, individuals who are highly allergic to tuberculoprotein cannot be differentiated, as a rule, from other infected children who have small or mild skin reactions. Despite the absence, in general, of detectable differences in the health status of children paralleling the varied degrees of allergy present, and regardless of a lack of knowledge as to why the intensity of tissue responses to tuberculin is markedly dissimilar in different individuals, it is often difficult to avoid entertaining suspicions that children with exceptionally large and severe Mantoux reactions either harbor more tuberculous pathologic changes or have more active and potentially more serious lesions than do other patients whose responses to tuberculin are smaller. My object in this paper is to present the results of studies directed particularly toward investigating the question Is the degree of skin sensitiveness to tuberculin present in children with the first infection type of tuberculosis related to the extent or character of the primary intrathoracic pathologic condition that can be demonstrated during life by roentgen examinations?

Observations on 188 Lymanhurst School children ranging from 8 to 17½ years of age provided the data on which this report is based. Each child selected for study was sensitive to tuberculin, and as a result of repeated roentgenologic and clinical investigations the group was known to include six children with parenchymal infiltrations that later resolved, to leave calcifications, fibrosis or no traces, 132 children with definite, conspicuous and characteristic calcified hilus glands or Ghon tubercles or both, twenty-one with negative chest plates, twenty-one with slight, questionable or inconclusive calcifications in hilus glands, and eight children with pleural thickenings. Roentgenograms were taken of the abdominal and cervical regions in only a few instances. Previous experience has indicated that the occurrence of demonstrable pathologic changes in these regions is rather infrequent in the children who come to Lymanhurst for examination; thus it seems that the incidence of lesions in these areas susceptible of being visualized roentgenographically probably is rather low in the cases selected for this investigation.

From the standpoint of general health, nutrition, and freedom from manifestations of illness, the group studied was comprised of children who collectively were indistinguishable from normal uninfected school children. The differentiation of the former from the latter depended essentially on the results obtained by Mantoux tests and roentgen examinations. The group selected for special study presumably is fairly representative of the infected portion of the general child population, except that in the Lymanhurst series the incidence of cases showing lesions demonstrable during life is rather high. No child was used in this investigation who had any form of demonstrable tuberculosis of the reinfection type. The deductions drawn from the observation made apply solely, therefore, to allergy in tuberculosis of the first infection type diagnosed as such after repeated roentgenologic and clinical examinations, and after months of observation.

The data recorded in tables 1 and 2 are based on a total of 1,864 surface area determinations (the area-by-weight method being used [1]) made on 466 Mantoux reactions to 0.1 mg. of old tuberculin (Saranac Lake product). In compiling the data for the 188 cases studied, averages were computed for five groups of children classified separately according to their roentgen examinations (tables 1 and 2). For each child, the maximum size found for the reaction when measurements were taken at the end of four successive intervals of twenty-four hours each was accepted as indicative of that individual's degree of skin sensitiveness to tuberculin, and these maximum measurements provided the basis for computing the values that appear in each table under the heading "average maximum reaction area."

Since the number of separate tests applied to different cases ranged from one to five, it was deemed advisable to calculate these averages according to two methods. In table 1 the mean maximum area of all the tests performed on each child was determined, and from these several individual means group averages were computed. In table 1, therefore, each child's degree of skin sensitiveness to tuberculin, as expressed in the maximum area to which the reaction grew, contributed to the average as a single observation regardless of whether one or several tests were performed on the individual. This procedure avoids permitting the data from one patient on whom several tests were applied from unduly influencing the average. The average maximum size of the reactions listed in column six of table 2 represents the means for all the tests applied. In this table, therefore, the extent to which the readings on one case influenced the average was dependent not only on the degree of allergy present but also on the number of separate tests performed on that individual. Since circumstances dependent on chance rather than selection based on sensitiveness to tuberculin determined the number of Mantoux tests applied to each child, it seems probable that means computed for the total number of tests performed represent with fair accuracy the average degree of skin sensitiveness present in the group, provided it includes a fairly large number of cases.

The average maximum size of the Mantoux reactions (37.2 sq. cm. in group A, table 1) in six children with primary pulmonary tuberculosis in the acute inflammatory or pneumonic stage exceeded that (33.2

From the Department of Pediatrics, University of Minnesota Medical School and Lymanhurst School for Tuberculous Children.

1. Stewart, C. A.: Cutaneous Reaction to Tuberculin in Primary Pulmonary Tuberculosis, Am. J. Dis. Child. **45**: 1229 (June) 1933; Am. Rev. Tuberc. **28**: 844 (Dec.) 1933.

sq. cm. in group B, table 1) for 132 cases with primary pulmonary tuberculosis in the older, more latent, calcified stage by 4.0 sq. cm. On computing the standard error for this difference a value of 0.58 is obtained, which signifies that fifty-six chances per hundred exist for this difference to arise by sampling or by chance. A similar analysis of the averages based on the total number of observations made on these two groups of children (groups A and B, table 2) reveals that twenty-two chances per hundred exist for the difference of during the first few years that postdate the primary infection. Apparently, therefore, in infected children with demonstrable lesions considered as typical of tuberculosis of first infection, no definite and proved relationship exists between the average degree of skin sensitiveness to tuberculin and the character (freshness or latency) of the demonstrable primary tuberculous intrathoracic lesions present.

On comparing the average maximum reaction area of 33.6 sq. cm. for the 138 children with demonstrable

TABLE 1.—*Average Maximum Reaction Area Based on Mean of All the Tests Applied to Each Case, Standard Deviation, Standard Error, Standard Error of the Difference, and the Chances per Hundred for the Difference to Arise by Sampling for Five Roentgenologically Dissimilar Groups of Children with Tuberculosis of First Infection*

No. of Cases	Age Range, Years	Group	X-Ray Reading	Average Maximum Reaction Area, Sq.Cm.	Standard Deviation	Standard Error	Standard Error of the Difference	Chances per 100 for the Difference to Arise by Sampling
6	9½-14	A	Resolving parenchymal infiltration	37.2	16.4	6.69		± P
							0.58	56
132	8-17	B	Calcified hilus glands and Ghon tubercles	33.2	19.0	1.65		
138	8-17	A and B	.....	33.6	18.8	1.60		
							0.786	43
50	8-17	C, D and E	Negative or inconclusive	31.3	17.3	2.45		
21	9-16	C	Negative	32.0	16.5	3.60	0.406	69
21	8-17	D	Questionable or indefinite calcification	31.6	15.0	3.28	0.55	58
8	10-17	E	Pleural thickening	28.6	13.1	4.63	1.02	30.8

TABLE 2.—*Average Maximum Reaction Area Based on All the Tests Applied, Standard Deviation, Standard Error, Standard Error of the Difference, and the Chances per Hundred for the Difference to Arise by Sampling for Five Roentgenologically Dissimilar Groups of Children with Tuberculosis of First Infection*

No. of Cases	Age Range, Years	Group	X-Ray Reading	No. of Mantoux Reactions, Measures, Sq.Cm.	Average Maximum Reaction Area	Standard Deviation	Standard Error	Standard Error of the Difference	Chances per 100 for the Difference to Arise by Sampling	Average Reaction Area at 24 Hours	48 Hours	82 Hours	96 Hours
6	9½-14	A	Resolving parenchymal infiltration	13	39.4	20.5	5.7		± P				
								1.22	22				
132	8-17	B	Calcified hilus glands and Ghon tubercles	343	32.3	21.9	1.18						
138	8-17	A and B	.....	356	32.6	22.1	1.17			20.4	28.2	19.0	8.3
								1.46	14				
50	8-17	C, D and E	Negative or inconclusive	110	29.6	17.8	1.7			19.5	25.7	17.1	6.2
21	9-16	C	Negative	35	30.0	16.5	2.79	0.86	39	20.6	26.8	18.6	5.8
21	8-17	D	Questionable or indefinite calcification	51	32.2	18.4	2.58	0.14	88.9	19.6	26.4	17.4	6.9
8	10-17	E	Pleural thickening	24	23.4	17.4	3.55	2.46	1.4	16.6	21.1	12.5	5.4

7.1 sq. cm. between the mean maximum reaction areas for the two series of cases to arise by sampling. Regardless of how the data are analyzed, therefore, they fail to show any difference of proved significance between the degree of skin sensitiveness to tuberculin in children with acute fresh pneumonic lesions of primary pulmonary tuberculosis as compared with that present in other children with first infection types of lesions in older, more latent calcified stages. This observation suggests that, shortly following the initial entry of tubercle bacilli into the body and before the acute lesions resolve, allergy reaches an average level, which is sustained with little or no significant change

lesions (groups A and B, table 1) with the mean of 31.3 sq. cm. for the fifty cases with negative chest films or with small or inconclusive lesions (groups C, D and E), the former are seen to have the larger average reaction area by 2.3 sq. cm. Statistical analysis of these data reveals that forty-three chances per hundred exist for this difference (2.3 sq. cm.) to arise by chance. The difference, therefore, is not significant. A similar analysis of the averages derived from the total number of observations made in these two groups of cases (table 2) likewise failed to show any significant difference (± P = 14) between the mean level of allergy in one series of children as compared with that present in

the other. When the group of fifty cases is subdivided into its component series of cases, the average degree of skin sensitiveness for children with negative chest films and also for children with questionable or inconclusive intrathoracic lesions (groups C and D, tables 1 and 2) is not found to differ significantly from the mean value determined for the 138 cases with distinct demonstrable lesions. This also applies to the small group of eight children with pleural thickenings, provided the averages are based on the mean reaction area for each case as computed in table 1. When, however, the mean is based on all the readings taken (table 2), a rather low average degree of allergy is found in the group. This low value is seen on inspection of the individual data (not recorded in the table) to arise from the fact that five Mantoux tests on one child, who had a pleural thickening associated with a bronchiectasis and who was only slightly sensitive to tuberculin, influenced the average to a considerable degree. The low level of allergy for this group can hardly be interpreted as significant.

and conspicuous intrathoracic lesions considered typical and representative of primary tuberculosis as compared with other infected children with negative chest films or with indefinite and inconclusive lesions, cumulative frequency or ogive curves were constructed representing the situation as found in these two groups of roentgenologically dissimilar cases. The position of each child on his respective curve in figure 4 was determined by the average maximum area of the several tests applied to that individual. Each case, therefore, contributed a single point to the curve for the group to which he belonged. Inspection of the curves in figure 4 discloses that the pattern of the distribution of different degrees of skin sensitiveness to tuberculin among children with negative or inconclusive chest films is very similar to that for cases presenting definite and conspicuous demonstrable intrathoracic lesions interpreted as scars typical of tuberculosis of first infection. The conclusion seems justified, therefore, that, as expressed in terms of the area of Mantoux reactions to old tuberculin, the incidence of different degrees of allergy

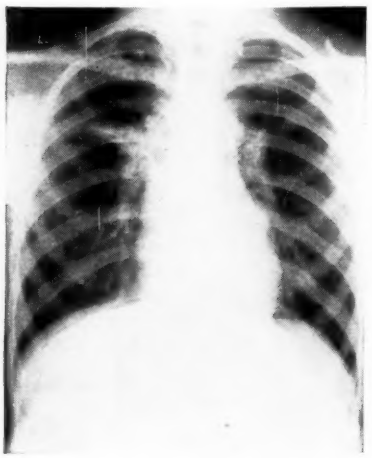

Fig. 1.—Condition in M. Z., aged 12½ years. Average maximum area of five Mantoux reactions was 11.3 sq. cm. In 1923, at the age of 1 year, bilateral consolidations were present in each upper lobe, which later resolved to leave bilateral apical Ghon tubercles and calcified hilus glands together with an area of fibrosis extending laterally from the right hilus.

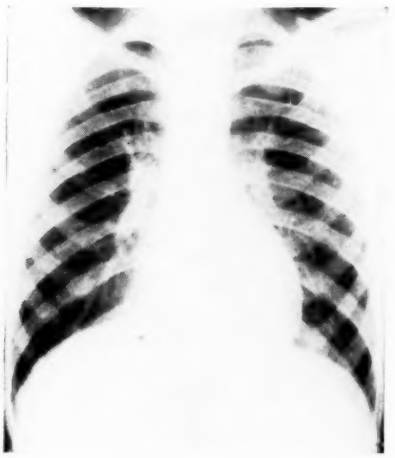

Fig. 2.—Condition in D. Z., aged 15 years. Average maximum area of two Mantoux reactions was 66 sq. cm. Roentgenogram shows no definite lesions characteristic of tuberculosis of first infection.

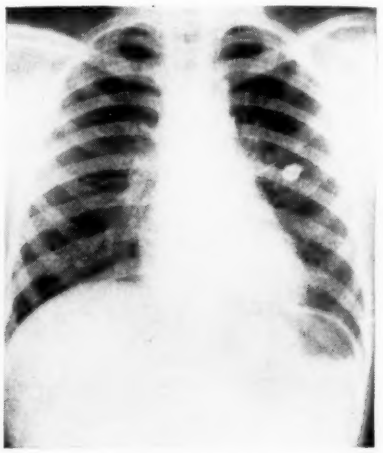

Fig. 3.—Condition in P. B., aged 13½ years. Average maximum area of four Mantoux reactions was 104 sq. cm. In 1922, at the age of 2 years, a parenchymal infiltration was present in the left upper lung field which resolved to leave a large Ghon tubercle and calcified hilus glands.

In general, therefore, the study failed to disclose the presence of any difference of proved significance in the average degree of skin sensitiveness to tuberculin in children with negative or inconclusive chest plates as compared with that present in other children with definite demonstrable intrathoracic lesions considered to be characteristic and typical of primary pulmonary tuberculosis. Apparently the degree of allergy to tuberculoprotein manifested by infected children is quite independent of the absence, presence, scarcity, abundance or character of the intrathoracic lesions of tuberculosis of first infection that can be demonstrated during life. The lack of correlation between the area of the Mantoux reactions and the roentgenologic observations is illustrated by the cases shown in figures 1, 2 and 3. The data in table 2 also show that the growth and decline of the areas of reaction for children with normal or inconclusive chest films and for other cases with positive plates are quite similar.

In order to analyze and to portray the manner in which different degrees of skin sensitiveness to old tuberculin are distributed among children with definite

introduced into groups of children by chance infections with tubercle bacilli which leave no definite traces or scars that can be identified with certainty during life is not essentially different from that induced in other groups of cases by infections that leave definite typical demonstrable primary tuberculous lesions.

CONCLUSIONS

1. The average degree of skin sensitiveness to old tuberculin present in a group of infected children with negative or inconclusive chest films was essentially equal to that present in groups of cases with definite and conspicuous demonstrable intrathoracic lesions in different stages of resolution and considered characteristic and typical of tuberculosis of first infection. The mean level of allergy to tuberculoprotein produced in groups of children by chance infections is independent, therefore, of the absence, presence, scarcity, abundance, size or character of the primary tuberculous lesions demonstrable by roentgen examinations during life.

2. The distribution of different degrees of skin sensitiveness to old tuberculin in a group of infected

children consisting of cases with normal or inconclusive chest films was found not to differ essentially from that present in other cases with distinct demonstrable intrathoracic lesions deemed characteristic of tuberculosis of first infection. The curves that represent the general pattern of the distribution of different degrees of allergy to tuberculoprotein found in each group of cases are very similar.

3. This study on living patients failed, therefore, to disclose evidence that justifies one in entertaining suspicions that children with large and intense Mantoux reactions harbor more extensive pathologic changes or

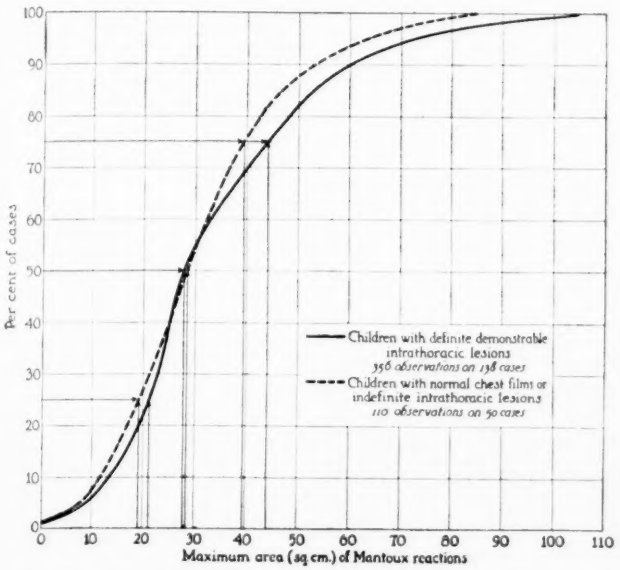
Per cent of cases
Maximum area (sq cm.) of Mantoux reactions
Children with definite demonstrable intrathoracic lesions
356 observations on 138 cases
Children with normal chest films or indefinite intrathoracic lesions
110 observations on 50 cases

Fig. 4.—Cumulative frequency curves showing the distribution of different degrees of skin sensitiveness to 0.1 mg. of old tuberculin in infected children with and without definite demonstrable intrathoracic lesions.

have more active primary tuberculous lesions than do other children who are less sensitive to tuberculin.

4. Groups of children with primary tuberculosis exclusively, who are dissimilar roentgenologically, are alike as far as the average group skin sensitiveness to tuberculin is concerned. Apparently soon after tubercle bacilli make their initial entry into the body and before the primary tuberculous lesions have time to resolve, allergy reaches an average group level that is sustained with little or no definite change throughout the first few years that postdate the primary infection.

5. Changes in the size of Mantoux tests throughout the periods of increment and decline of the reactions in children with normal or inconclusive chest films roughly parallel similar changes manifested by skin reactions in other children with definite demonstrable intrathoracic lesions typical of tuberculosis of first infection.

953 Medical Arts Building.

Diagnosis of Intracranial Aneurysm.—The diagnosis of intracranial aneurysm cannot be made with any degree of certainty until rupture occurs. Focal signs, if present before rupture takes place, are not different from those found in other localized disease processes within the cranium, notably cerebral tumor. Furthermore, Fearnsides, Cushing and others have pointed out that cerebral aneurysms which do not rupture rarely give rise to symptoms. The uniform clinical picture produced by aneurysms arising from the anterior portion of the circle of Willis makes the diagnosis during life possible.—Garvey, P. H.: Aneurysms of the Circle of Willis, *Arch. Ophth.* **11**:1032 (June) 1934.

Clinical Notes, Suggestions and New Instruments

THE HEREDITY OF A CONGENITAL WHITE SPOTTING IN NEGROES

CLYDE E. KEELER, SC.D., BOSTON

Numerous isolated cases of congenitally piebald Negroes are recorded in the early literature. Little is known of the parents or progeny in these cases. The individuals described by Ptolemy, Apollonius, Gumilla, La Mothe, Blumenbach, Arthaud and Le Vallois, and the ones painted by Le Masurier and by Da Rocha were probably of the same type as those with which this paper is concerned, but several of these authors may have described the same individual. The more recent accounts of Piffard, Maas, Gould and Pyle, Baudouin, Levi, Frassetto, Hutchinson, and Simpson and Castle (all reviewed and with complete bibliography[1]) doubtless all refer to members of the family to be discussed here. In the several published pictures of members of this family, the clothing has interfered with a complete portrayal of the character.

Individual 4 in the pedigree chart shows normal pigmentation to be present on the head, back, hands and feet. There is, however, a white head blaze and a patch of white under the chin. The abdomen, sides, arms and legs are in general white but are speckled with small patches of normally pigmented skin. This type of pigment distribution is present in all piebald members of this family, although it may be stated that the one here presented bears somewhat more white than the average.

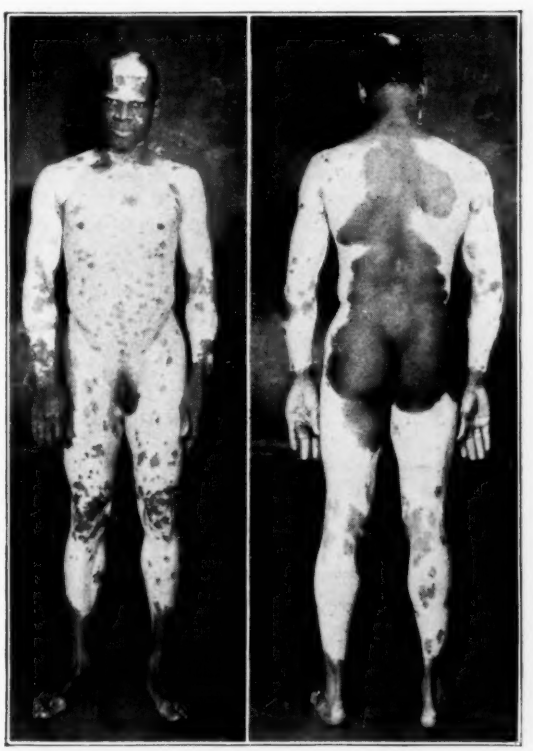

Fig. 1.—Appearance, front and back, of markings on individual 4.

The construction of the pedigree chart of this family has been made possible by correspondence with individuals 1 and 2 and by personal interviews with 3, 4 and 6. In figure 2, squares represent males, circles represent females and diamonds represent sex unrecorded. The black symbols represent the piebald individuals.

The character is said to have first appeared in female 1. This woman, who is said to be 86 years of age, was born and

From the Howe Laboratory, Harvard Medical School.

1. Pearson, Nettleship and Usher: A Monograph on Albinism in Man, Draper's Company Research Memoirs, Cambridge University Press.

still resides in Louisiana. She states that she was born of normal parents. If this is the case, the character must have arisen as a mutation in the germ plasm of one of her immediate parents. Of course, the possibility remains that she might have had a piebald white father, the extent of whose white markings was not generally known owing to the normal color of his skin.

Isolated members of this family, and occasionally several members together, have traveled with circuses and freak shows in Europe and America ever since 1896, and individuals 3, 4 and 6 were to be seen in 1933 at a Century of Progress Exposition. It was owing to such travels that descriptions of members of this family have found their way into European literature.

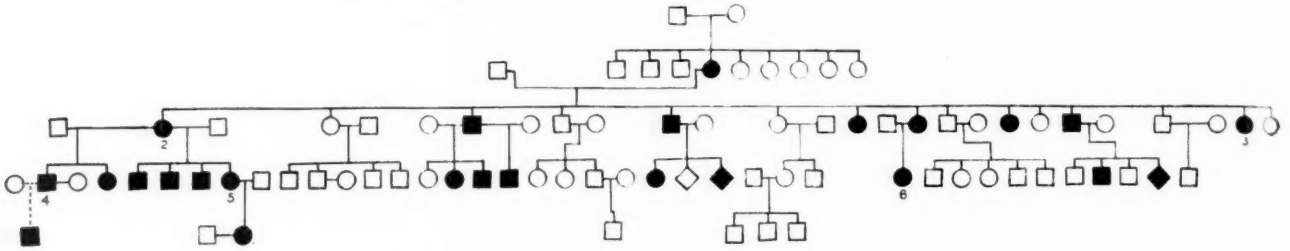

Fig. 2.—Pedigree chart of family of piebald Negroes.

Most of these Negroes have married within their own race. In this connection, however, female 6 deserves particular mention: Her father is an Italian. The pigmented portions of her skin are consequently lighter than those of her Negro relatives, but in spite of this her piebald pattern is very similar to that of other members of the family.

It will be noted from an examination of figure 2 that the character is transmitted as a simple dominant unit character, as was shown by Simpson and Castle. Each piebald individual is born of a piebald parent who is heterozygous for the piebald character and transmits it usually to half of his offspring. No normal individual of the family transmits the piebald character. The pedigree chart shows a total of twenty-five piebald Negroes in four generations, the population comprising eighty-five individuals. In ten matings of piebalds with normals there were produced twenty-four piebald and eleven normal offspring. Since equality of each type is expected, it will be seen that the production of piebalds considerably exceeds expectations.

To biologists a dominant mutation of this sort is of interest as showing, in the case of man, the occurrence of an inherited pattern of skin pigmentation such as that found in other mammals. Familiar examples are seen in the Dalmatian "coach" dog, the English rabbit, and Hereford cattle. A study of the normal variation within the piebald pattern of this family would be of considerable interest.

Bussey Institution.

DERMATITIS OF THE EYELIDS

HERBERT RATTNER, M.D., CHICAGO

THE JOURNAL has recently contained several reports dealing with dermatitis of the eyelids caused by eyelash dye. Dermatitis of the eyelids occurs rather frequently; it is usually due to external irritants, but to determine the irritant may be difficult.

An experience with four cases seen within a few days of one another prompts this note. All four patients were women who presented inflammations of varying severity, and the exciting agent in each case was different.

CASE 1.—A young woman, a manicurist, shown in the illustration, applied Godfrey's dye to her eyebrows and eyelashes and within a few hours the lids became swollen and red and itched intensely. When she was seen the next day there was severe conjunctivitis with photophobia, and the lids, eyebrow regions and adjacent portions of skin were the seat of an intense vesicular eruption. The skin was edematous and red, and she complained of severe pain in the eyes. The eyelashes were cut off as close as practicable, and the dermatitis was treated with soothing dressings. It required about four weeks for the eruption to heal, and two months passed before she was able to resume her work.

The patient had been treated for a similar dermatitis two years prior to this outbreak, and for the past two years she had not used dye. She had resumed the practice in the hope that her susceptibility had been overcome. It is of interest that for years she has used peroxide and ammonia to bleach her scalp hairs without untoward effects as well as lip rouge, face rouge, and numerous powders and creams. The photograph was taken one week after treatment had been instituted and there was already considerable improvement.

CASE 2.—A young women complained of dermatitis of the eyelids of one year's duration. The lids were red and scaly and slightly swollen from rubbing. The dermatitis would improve at times and then flare up, so that in the past year she had never been entirely free from dermatitis. Among the irritants to which she was exposed were cosmetics, artists' supplies, flowers, a fur coat collar and the usual household articles, such as washing soaps and cleaning fluids. After the nature of her trouble was explained to her, she recalled that

Dermatitis from Godfrey's hair dye applied to eyebrows and eyelashes (case 1).

the flareups of her dermatitis followed usually after visits to the hairdressers, where the shampoo was followed by the application of a so-called wave lotion to maintain the waves in her hair. No changes were made in her routine other than to omit the wave lotion from her ritual. The dermatitis cleared up but reappeared when the lotion was again used. She has since had no recurrence of the dermatitis; she is able to pursue her

...t studies and her household duties, and she is able to use ...r other cosmetics without harmful effects.

CASE 3.—A young woman was seen three years ago for dermatitis of the eyelids, the cause of which was found to be a face lotion that contained camphor. There had been two or three recurrences which the patient herself had been able to trace to various cosmetics. She returned this time with a persistent dermatitis of some two months' duration. The exciting agent was found to be a brown fur coat collar.

CASE 4.—A woman of middle age, a patient of Dr. William Allen Pusey, presented a subacute scaly erythematous dermatitis of the eyelids of two weeks' duration. The history suggested that cold cream was the excitant. The patient was skeptical, because she had used this particular kind of cold cream for years. A patch test with the cream, which gave a positive local reaction and a focal flareup, convinced her. Although, as stated, she had used this make of cold cream for years, the jar was a new one just recently purchased; it is likely that some new ingredient such as a new perfume had been incorporated by the manufacturers. The patient was not inclined to submit to further studies; she merely discarded the cold cream for another brand.

COMMENT

These cases illustrate some important practical facts. In all cases of dermatitis of the eyelids, external irritant must be sought as the exciting agents. Fortunately, most irritants produce mild inflammatory reactions, but they are sufficient usually to cause a great deal of annoyance and some unsightliness, and occasionally, as in the case with dyes, the reactions are so severe as to disable the patient. The nature of the irritant is sometimes self evident; more often it is obscure. But usually the irritant is found to be hair tonic, hair dye or wave lotion, face creams, eye washes, nasal sprays, face powders and rarely spectacle rims. Within a few days I have seen a case in Dr. Pusey's practice in which the dermatitis of the lids and on the nose and above the ears appeared where contact occurred with imitation horn spectacles.

A good intelligent history from a cooperative patient, brought out by pointed questioning, will help to solve more cases than will routine skin tests. When skin tests are necessary the patch test is of the greatest value, for the sensitization in such cases is epidermal. It is in patients who are sensitive to more than one irritant, as in case 3, that patch tests are necessary, or as a confirmatory test as in the fourth case. For routine office procedure, however, it usually suffices to obtain a good history and to outline the problem to the patient, and in most instances an intelligent patient will herself ferret out the etiologic agent of her dermatitis.

7 West Madison Street.

EXCRETORY UROGRAPHY AFTER SUBCUTANEOUS INJECTION OF NEOSKIODAN

EDWIN BEER, M.D., AND FREDERICK H. THEODORE, M.D., NEW YORK

The object of this note is to call attention to a third route for administering chemicals of the new group for excretory urography. In America, apparently, no attempts have been made along these lines, though intravenous and oral administration are well recognized. In 1931 Butzengeiger [1] first attempted subcutaneous skiodan in adults, using a 4 per cent (isotonic) solution and injecting 500 cc. containing 20 Gm. into the axillae. In thirty cases he reported results almost as satisfactory as those obtained by intravenous injection. The maximum excretion appeared from thirty to fifty minutes after injection, and there were no local or general deleterious effects.

In 1932 Hillebrand [2] used this method in a child of 14 months with a renal tumor in whom intravenous injection was not possible. He used 100 cc. of a 4 per cent skiodan solution and obtained good results. The child died after the nephrectomy and autopsy showed no disturbance, inflammatory or necrotic, at the site of injection in the axillary tissues.

1. Butzengeiger, O.: Ausscheidungs-Pyelographie (Urographie) durch subkutane Abrodil-Infusion, Röntgenpraxis **3**: 881-884 (Oct. 1) 1931.
2. Hillebrand, H.: Ausscheidungspyelographie durch subkutane Abrodil-Infusion beim Kinde, Zentralbl. f. Chir. **59**: 1048 (April 23) 1932.

In the service at Mount Sinai Hospital, fifteen patients—ten children, the rest adults—have been injected in this way with fairly satisfactory results. In this series a 7 per cent neoskiodan solution, approximately isotonic, was used, 50 cc. being injected into each axilla, a total dose of 7 Gm. The low toxicity of the substance allows administration of the full dose in infants.

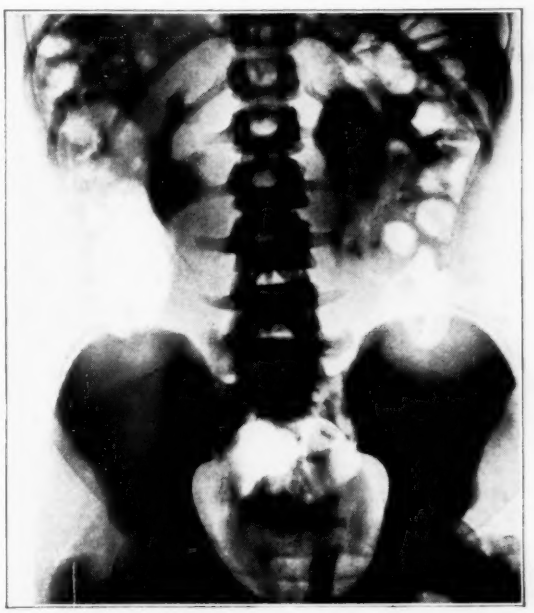

Fig. 1.—Intravenous pyelogram showing a horseshoe kidney.

The injection is attended by only the usual slight discomfort of a hypodermoclysis, local anesthesia being used for the older patients. In no case was there subsequent tenderness or induration. The best urographic shadows are obtained about fifty to sixty minutes after injection, a compression bag being used,

Fig. 2.—Subcutaneous pyelogram of the same case as in figure 1, two years later.

although good urograms can be taken at any time from thirty to ninety minutes after injection, so that only one or two plates are necessary. To demonstrate the efficiency of this procedure, two pictures of a horseshoe kidney are reproduced, one taken after intravenous injection and the other after subcutaneous injection of neoskiodan.

Fifth Avenue and One Hundredth Street.

CECAL POLYP ON OCCLUDED BASE OF APPENDIX

ABRAHAM STRAUSS, M.D., CLEVELAND

The reason for reporting this case is the unusual location of the polyp. Polyps and papillomas occur in any part of the colon. They may be single or multiple and usually are of inflammatory origin. The case reported here was probably due to repeated attacks of inflammation of the appendix by which the lumen of the appendix became closed off from the cecum. The appendiceal lumen thus enclosed became a source of irritation itself, and the response to this was a reaction of the mucosa on the cecal side of the obliterating membrane in the form of a polyp.

A woman, aged 22, married three years, with a negative family history, has one child, aged 2 years, living and well. The menstrual history was negative. At the age of 15 she had an attack of severe abdominal pain while at a girls' camp. This was diagnosed as appendicitis. Since then, she has had some "bilious" attacks of pain in the lower part of the abdomen, more on the right side, accompanied by vomiting. She used to be confined to bed a day or two with each attack. Thirteen months ago she had a severe attack when I examined her for the first time. This attack was characterized by severe pain in the lower right quadrant of the abdomen, nausea and vomiting. Examination at that time revealed tenderness and slight spasm over McBurney's point. Pelvic examination was negative. The temperature was 99, the pulse 88, and the white blood count 12,000. Because the physical manifestations were still mild enough and because the patient was only nine months post partum, it was decided to be conservative unless the signs grew worse. Thus she was tided over this attack and remained well, with only slight discomfort at times, until Dec. 23, 1933, when she had sufficient pain to go to bed. I saw the patient the next day when she was a little better and set the date for operation for December 27 to allow her to have Christmas at home. The physical conditions were the same as one year before. The patient had no other symptoms and the rest of the physical examination was negative.

December 27, resection of the tip of the cecum with the appendix was done. The patient was prepared and draped in the usual manner. McBurney's incision was made. The cecum was secured and the appendix was found to lie in the fossa beneath the cecum. It was short, thick and very firm, almost as if it contained concretions. The appendix was bound down by much thickened, indurated tissue, which gave evidence of chronic inflammation. The base of the appendix was very broad and thick and seemed to be the prolongation of a funnel-shaped cecum, as it was not sharply demarcated at the cecum. A polypous growth about 1 cm. in length was palpated, arising from the base of the appendix and projecting into the cecum. The appendix was freed from the surrounding tissue and from the meso-appendix, and the tip of the cecum was crushed with two Kelly clamps proximal to the polyp and severed with the actual cautery; thus, the tip of the cecum was resected together with the appendix. The cut ends of the cecum were then closed with a Cushing stitch of chromic No. 1 catgut. Closure was further strengthened by serosal sutures of linen. All bleeders had been ligated, and closure was effected in the usual manner.

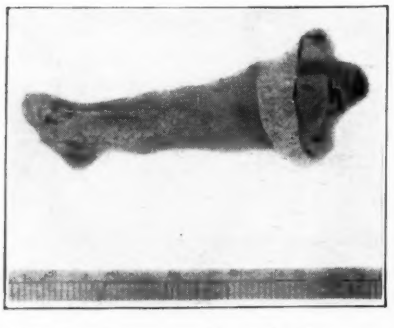

Fig. 1.—Appendix with wall of cecum turned down, displaying projecting polyp.

The preoperative diagnosis was chronic appendicitis. The postoperative diagnosis was chronic appendicitis with a polyp of cecum at the base of the appendix.

A pathologic report was made by Dr. Benjamin S. Kline, pathologist of Mount Sinai Hospital. The appendix and a small portion of the regional cecum were examined. The appendix was 4.75 cm. long and from 2.5 to 8 mm. in diameter gradually enlarging toward the proximal end. The serosa, somewhat thickened, showed sheetlike fibrous tags adherent to the distal half. Attached to the adhesions was a flat, bean-shaped mass about 5 by 4 by 2 mm. (lymph node? adipose tissue?). The most striking thing about the specimen was the fact that there was no detectable opening from the appendix into the cecum. Instead, the site was occupied by a polypoid mass about 4.5 mm. in diameter and 7 mm. long, continuous with the mucous membrane of the cecum. The polyp projected into the cecal lumen. There was some reddish discoloration of the surface of the polyp. On cross section of the appendix about 5 mm. from the proximal end, the lumen was distended

Fig. 2.—Polyp of cecal mucosa overlying blind base of appendix. The three coats of cecum and appendix can be traced.

by coherent dry fecal material about 7 mm. in diameter. When this material was expressed from the proximal portion of the appendix, a cup-shaped depression was observed, and just beyond the blind end lay the base of the polyp already mentioned. On section of the appendix, the lumen obliterated in the tip was elsewhere slightly or considerably distended with coherent dry secretion. There was some reddish flecking of the mucosa throughout. The walls in general stretched. There was perhaps some edema of the inner coats.

The gross diagnosis was old chronic appendicitis of the proximal portion with occlusion of the lumen, distention of the lumen by coherent dry fecal matter, and old adhesions about the distal half of the appendix. There was an overgrowth of cecal mucosa in the region of the previous appendiceal orifice with polyp formation here; early acute appendicitis(?).

Microscopic examination of two sections of the appendix from 7 to 11 mm. in diameter showed the lumen to be from 4 to 8 mm. distended by coherent fecal material, which in places appeared to continue into the mucosa a small distance with but minimal regional reaction. There was slight scarring and round cell infiltration of the inner coats and some edema of all coats. A third section was about 3 mm. in diameter, with no lumen, no glands and no lymphoid tissue in the mucosa. There was some edema of all the coats. A fourth section, including the regional cecum, showed a striking picture. The most proximal portion of the appendix showed complete occlusion of the lumen and fusion of the submucosa of the appendix with the submucosa of the cecum. The appendix in this portion showed a picture similar to the first and second sections, with distention of the lumen by fecal material and a thin mucosa. There was slight scarring and round cell infiltration of all coats. Regional to the occluded appendix there was a polypoid overgrowth of cecal mucosa and submucosa about 4.5 mm. in diameter with moderate scarring, considerable round cell infiltration and marked leukocytic infiltration. There were numerous lymph follicles present. There was an area of necrosis and pus cell infiltration and hemorrhage of the mucosa

of overgrowth several millimeters in extent. There was some scarring and round cell infiltration of the cecal mucosa at the margins of the section.

The final diagnosis was occlusion of the lumen at the proximal end of the appendix and fusion of the submucosa with the submucosa of the cecum; chronic appendicitis (slight) with considerable distention of the lumen, and old adhesions about the distal half of the appendix.

1623 Medical Arts Building.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.*—ED.

THERAPY OF ERYSIPELAS

PROPHYLAXIS

1. Isolation from surgical patients is desirable and from obstetric patients is imperative, but quarantine otherwise is not required. The period of isolation should continue until all local lesions are healed.

2. Disinfection of the hands and of the instruments of physicians and of nurses taking care of a patient with erysipelas is necessary. Even with this precaution, physicians and nurses should not simultaneously attend surgical or obstetric patients. Thorough cleansing suffices for final disinfection.

3. The organisms may persist in the patient for a long time in sinus or nasal discharges, which accounts for the tendency to recurrence in those who have suffered from the disease. In such carriers even the slightest traumatism, especially about the nose, should be prevented as much as possible.

TREATMENT

1. *Local.*—(*a*) Ultraviolet irradiation of the area involved and of the normal adjacent skin at least two inches beyond the border should be done. The mercury quartz burner is used. The lamp is run for ten minutes first, so as to work up to maximum efficiency. The rays must be direct, so as to strike the diseased area and adjacent skin at right angles for a duration of ten minutes at a distance of 12 inches. In infants and very young children the time may be reduced to five minutes and occasionally to three minutes. If the area of erysipelas shows evidence of spreading, a second treatment will be necessary. Usually one intense treatment suffices.

(*b*) Roentgen rays, 100 kilovolts, unfiltered, in moderated doses (not over one-fourth erythema dose) should be applied and the application repeated not more than once on the second day, if results have not been satisfactory. It is necessary to include a 2-inch margin of apparently uninvolved skin in order to treat all infected areas. Roentgenotherapy is not advisable in the diabetic, the nephritic and young children.

(*c*) A barrier consisting of a narrow (three fourths inch) band of contractile collodion (Collodion, U. S. P.) all round a small lesion may possibly be affective. The band must be applied thickly enough to produce a deep depression about 2 inches from the margin.

(*d*) Evaporating lotions, applied ice cold by means of uncovered compresses, give relief to the hot burning sensation, which may be still better ameliorated by the addition of 1 per cent phenol. The Solution of Aluminum Acetate, diluted 1:8, is preferable for moist areas. If ulcers develop, these should be treated in accordance with the principles laid down in "Ulcer Therapy."

2. *Erysipelas Antiserum.*—Administration of erysipelas antiserum should be preceded by an intracutaneous test of 0.1 cc. of the serum diluted 1:10. If the test is negative within fifteen minutes, one may inject the remainder of the contents of the ampule. The dose may be repeated daily for three days. If the test is positive, it might be well to use convalescents' erysipelas serum rather than the serum derived from the animal, in amounts varying from 40 to 100 cc.

3. *Fever Regimen* (q. v.).—Restraint is not infrequently necessary, as acute delirium may supervene. Protection of the patient should consequently be provided.

4. *Symptomatic Treatment.*—A hypnotic may be required for obstinate insomnia (q. v.) or stimulation for collapse (q. v.).

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
H. A. CARTER, Secretary.

SOURCES OF ULTRAVIOLET AND INFRA-RED RADIATION USED IN THERAPY

PHYSICAL CHARACTERISTICS

W. W. COBLENTZ, PH.D., D.Sc.
WASHINGTON, D. C.

It seems as though there has never been such a widespread attempt as today to foist on an unsuspecting and trusting public all sorts of alleged physical cure-alls to relieve people's ills and to keep them in health. Prominent among these panaceas is the exploitation of ultraviolet and infra-red rays. The mere mention of "infra-red rays" creates in the mind of many persons a feeling that this is something new and mysterious that they have missed, when, as a matter of fact, it is difficult to think of a warm object that does not emit infra-red rays.

When an object is heated to a higher temperature than its surroundings, an excess of infra-red rays passes from it to the surrounding objects. Examples of sources of infra-red rays are arc lamps, incandescent lamps, coal fires, steam pipes and hot stoves. Because of their low temperature, the infra-red rays emitted by hot water bags and electrical heating pads are of low intensity, and hence they are insignificant in comparison with the amount of heat that is obtained by conduction, by having the hot pad or hot water bottle in contact with the body. Of course it sounds more impressive to speak of infra-red rays than to speak of the application of heat by conduction, by direct contact of the pad with the body.

There is nothing new or mysterious about the ultraviolet and the infra-red rays. A person is always exposed to the infra-red rays when standing near a steam radiator, an open grate fire or even an electric toaster. The spectral quality and total intensity of the infra-red rays emitted by the radiant heaters for warming rooms is essentially the same as emitted by the infra-red lamps sold for therapeutic purposes except that the latter have smaller reflectors and have more elaborate adjustable mountings, which cost more money.

During the past few years, experimental data have become available showing that the spectral band of ultraviolet radiation of wavelengths shorter than about 3,150 angstroms,[1] occurring in sunlight and in some artificial sources of radiation, if sufficiently intense and if the time of exposure is sufficiently prolonged, has the power of preventing and of curing rickets. This is the underlying basis for exploiting ultraviolet of these wavelengths for general healing purposes. While this point of view may be too broad, the beneficial effects of short wavelength ultraviolet radiation in surgical tuberculosis and certain skin diseases is recognized.

Before I discuss the various types of sources of radiation available for therapeutic purposes, it will be instructive to consider several incidental questions that enter into the subject. In fact, in order to apply radiation therapy successfully, it is important to have a thorough understanding of the physical properties of the source of thermal radiation as well as the physiologic reaction of living matter when exposed to it. Successful phototherapy depends on a knowledge of the spectral quality of the source, the total quantity or intensity, and the time of exposure, which depends on the distance of the patient from the lamp.

Excepting for the question of intensity and wavelength, physically there is no marked distinction between the various regions of the spectrum called "ultraviolet," "visible" and "infra-red." Chemically and physiologically there is a distinct difference. The action of infra-red rays is thermal and instantaneous, producing a burning sensation when the intensity is too great. On the other hand, the ultraviolet rays are actinic, causing, among other effects, the coagulation and precipitation of albumin. Their action is slow and insidious, so that the effect is not perceived until from three to six hours after exposure. A short exposure to an innocent-looking carbon or mercury arc may produce severe conjunctivitis. Hence the eyes should be protected with deep brown glasses or covered with a black cloth to prevent injury when the body is being irradiated.

Although there is no sharp demarcation of these rays into wavelength bands, for convenience I shall indicate these spectral ranges (table 1) and mention some of the photochemical and physiologic effects, if known. The wavelengths may be written in angstroms, microns ($\mu = 0.001$ mm.) or millimicrons ($m\mu$); i. e., wavelength $3{,}000A = 0.3\ \mu = 300\ m\mu$. Thus the ultraviolet emission line of the quartz mercury vapor arc lamp, frequently mentioned in this paper, is 2,967 angstroms, 0.2967 micron or 296.7 millimicrons. More complete data on the radiation from arc lamps[2] and on their germicidal action[3] are given in other publications.

1. The angstrom unit of wavelength is one ten-millionth millimeter.

2. Coblentz, Dorcas and Hughes: Bur. Stds. Sc. Papers **21**: 535, 1926 (Nos. 539, 15 cents). The Bureau of Standards publications are obtainable only from the Superintendent of Documents, Washington, D. C., at the prices indicated.

3. Coblentz and Fulton: Bur. Stds. Sc. Papers **19**: 641, 1924 (No. 495, 20 cents).

1. *Depth of Penetration of Thermal Radiation.*—Authorities differ as to the depth of penetration of radiation of different wavelengths into the human body. Eventually this may not be an important question, but it may serve to explain why discomfort is sometimes experienced when one is exposed to certain types of lamps, owing to the emission of an excessive amount of infra-red radiation of wavelengths that cannot penetrate deeply into the skin.

In passing it is instructive to note that the shortest, "hard" x-rays and longest radio waves are deeply penetrating. It is therefore of interest to summarize what is known about the transparency of the skin and the blood to radiation of various wavelengths throughout the spectrum.

Data on the depth of penetration of radiation into the skin are given in table 1. It is, of course, to be understood that small amounts of radiation penetrate to still greater depths than here indicated and that these values represent limits in depth at which effective biologic action may still be expected. In the dehematized skin the depth of penetration would be greater than under normal conditions.

TABLE 1.—*Different Spectral Regions, Probable Depth of Penetration and Probable Physiologic Action of Rays from Different Sources* *

Spectral Region	Penetration of Rays	Physiologic Action	Source
Far ultraviolet 1,800 to 2,900 A	Superficial 0.1 to 0.5 mm.	Photochemical	Metals in carbon arc and spark of metals (mercury arc)
Near ultraviolet 2,900 to 3,650 A	Superficial 0.5 to 1 mm.	Photochemical	Sun; metals in carbon arc; arc of metals
Visible spectrum 3,900 to 7,600 A	Superficial 1 to 5 mm.	Thermal; nerve stimulation	Sun; carbon arc
Near infra-red 7,600 to 15,000 A	Deep 10 to 30 mm.	Thermal; nerve stimulation	Sun; carbon arc; gas-filled tungsten lamp
Far infra-red 15,000 to 150,000 A	Superficial 3 to 0.1 mm.	Thermal; nerve stimulation	Carbon arc; infra-red (radiant) heaters

* Wavelengths in angstroms, A.

2. *Reflectors and Windows.*—In view of the fact that most lamps used for therapeutic purposes are provided with reflectors and windows, it is relevant to emphasize the fact that the mirror acts solely as a reflector of the rays that fall on it and does not itself contribute anything additional to the ultraviolet radiation emitted by the source. In fact, since the reflector absorbs more of the short wavelength ultraviolet than of the visible and infra-red rays, especially when the surface is composed of a powdered metal (for example, aluminum) which has been applied with a lacquer, the total amount of ultraviolet radiation in proportion to the visible and the infra-red rays is relatively lower in the reflected rays than in those that proceed directly from the source. The reflector, placed back of the source, simply increases the total amount of radiation of all wavelengths falling on an object placed in front of the lamp. The reflector cannot supply ultraviolet wavelengths that may be lacking in the source, and after it becomes covered with smoke from the arc, the amount of reflected radiation is, of course, greatly reduced.

Likewise windows or filters used in front of the source of ultraviolet, whether it is the sun, the mercury arc or the carbon arc, emit no ultraviolet wavelengths

themselves but always reduce the intensity of the rays that are present. The same is true of lacquers used in applying the powdered metal for a reflecting surface. Linseed oil and cellulose lacquer are highly opaque to ultraviolet radiation of wavelengths shorter than 3,500 angstroms.

3. Radiant Heat Versus Conducted Heat.—Owing to the general misconceptions on this subject, it is relevant to call attention to the difference in heat transfer by conduction and by radiation. Practically all the heat obtained from an electrically operated heating pad or a hot water bottle (which takes the place of a heated brick or of ground meal used in the earlier days), placed in contact with the body, is transferred by thermal conduction. The amount obtained in the form of infra-red rays is negligibly small.

SOURCES OF RADIATION

Under the caption of sources of radiation, various types of thermal radiators are considered, beginning with those operated at low temperatures and therefore emitting principally infra-red rays. In order to obtain an appreciable amount of ultraviolet radiation it is necessary to heat the radiating substance to a high temperature, 3,000 C. (5,432 F.) or higher. Since solids (e. g., metals such as tungsten) evaporate rapidly at high temperatures, sources of ultraviolet radiation are practically confined to electric arcs between electrodes of metals, of carbon, and of mercury vapor in a closed tube of quartz glass called "the burner."

1. *Miscellaneous Sources.*—Under this caption may be grouped vacuum incandescent lamps, kerosene lamps, acetylene flames, luminous and Bunsen gas flames, and incandescent mantles heated by gas flames, which do not emit sufficient ultraviolet radiation to be useful in therapy. Neither is the ultraviolet emitted of sufficient intensity to be a source of injury to the eye. Vacuum incandescent lamps have been built into cabinets used for treatment by means of infra-red rays. Wood and coal fires, in an open grate, emit practically no ultraviolet radiation but are good sources of infra-red rays, which will become less and less familiar to coming generations. The open front gas stove, with its incandescent radiant of refractory clay, cannot be operated at a sufficiently high temperature to emit an appreciable amount of short wavelength ultraviolet rays. It is a convenient source of intense infra-red radiation, giving a spectral energy distribution that is somewhat similar to curve *B* in chart 1, provided care is taken to avoid the production of carbon monoxide which results from improperly adjusted gas burners and insufficient ventilation.

2. *Infra-Red Radiators.*—Under this caption may be placed various radiant heaters used for therapeutic purposes. They consist of a concave reflector at the focus of which is an incandescent filament lamp in a glass bulb, or a heater consisting of an electrically heated solid rod, or a resistance wire embedded in or wound on an electrically nonconducting, refractory material, such as, for example, steatite, "lava" or porcelain. The color of the surface (whether white or black) is unimportant. The nonmetallic surface emits the greatest amount of infra-red rays.

The incandescent filament radiators that are enclosed in glass bulbs emit radiation of wavelengths 5,000 to 40,000 angstroms (chart 1), with the maximum emission at from 11,000 to 20,000 angstroms, depending on the temperature of the filament. Only a small amount of radiation is emitted by the glass bulb.

The radiant heaters that are not enclosed in glass emit perceptible radiation of all wavelengths throughout the infra-red to 150,000 angstroms (15 μ in the illustration), beyond which point the intensity is very low, as shown in chart 1. The carbon dioxide and water vapor in the air selectively absorb certain wavelengths in the infra-red, producing indentations in the spectral energy curves, especially at 4.2 microns (42,000 angstroms), as shown in this illustration. With increase in temperature the maximum emission shifts toward the short wavelengths, so that for a surface temperature of from 300 to 400 C. (572 to 750 F.) the maximum emission (curve *C*, chart 1) is not well defined, extending from 4 to 5 microns (40,000 to 50,000 angstroms), whereas at a low red heat (from 600 to 800 C., or 1112 to 1472 F.) the maximum emission becomes more sharply defined (curve *B*, chart 1) and lies between 2 to 3 microns (20,000 to 30,000 angstroms). Moreover, the infra-red radiation from the latter is far more intense (eight to ten times greater) than that emitted by the heater at 300 C. (572 F.).

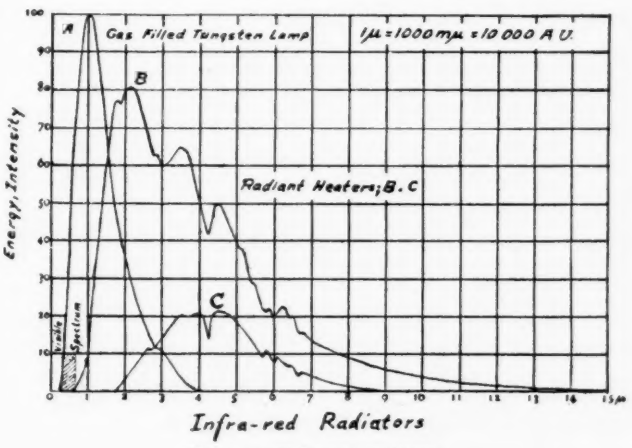

Chart 1.—Infra-red radiators

The reflectors surrounding these heaters are practically nonselective; hence they have no appreciable effect in modifying the spectral composition of the radiation emanating from the heater. In other words, there is no way of producing narrow spectral zones of radiation by emission in the infra-red. On the other hand, filters for isolating relatively narrow bands of the visible and ultraviolet are easily provided.

For experimental purposes, the most easily produced, fairly narrow band of infra-red radiation is obtainable from the Bunsen nonluminous gas flame, which has a strong emission band at 4.4 microns (44,000 angstroms), but the total intensity is rather low.

A filter consisting of a cell of water and red glass will confine the radiation stimulus to the spectral region extending from 6,000 to 14,000 angstroms. The red glass alone will confine the stimulus to wavelengths between 6,000 and 40,000 angstroms. Such a filter may be used in front of a Mazda, gas-filled tungsten lamp as a source of infra-red rays.

As already mentioned, these radiant heaters, made for therapeutic purposes, do not differ in principle from those used for heating dwellings, except that the latter have a wider pan or hood for reflecting the rays over a wide area, while in the therapeutic radiator the reflector projects the radiation on a small area.

3. *The Tungsten Filament Lamp.*—The "Mazda" tungsten filament lamp, enclosed in a bulb of special glass that transmits ultraviolet at wavelengths extending from 2,800 to 3,100 angstroms (recognized as effective in preventing rickets) has been considered for a source of ultraviolet radiation. A small lamp, similar in appearance to the automobile headlight lamp, was on the market some time ago. It was operated at a considerably higher voltage than that normally used, which shortened the useful life to a few hours. It was claimed that under these conditions the lamp would emit sufficient ultraviolet radiation for therapeutic purposes. The

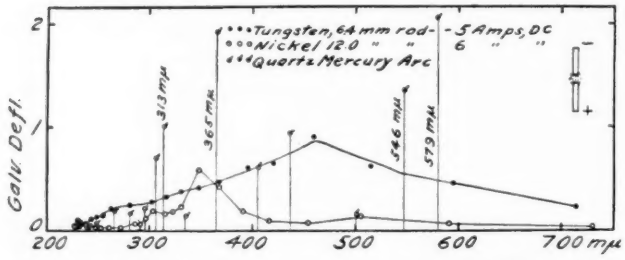

Chart 2.—Spectral energy (intensity, galvanometer deflections); distribution of the radiation emitted by the arc between electrodes of nickel, of tungsten and of mercury vapor in a quartz tube, called "the burner."

lamps examined did not emit an appreciable amount of ultraviolet rays of wavelengths less than 3,100 angstroms.

Calculations and radiometric measurements show that the tungsten filament lamp, even when enclosed in a bulb that transmits the ultraviolet rays extending from 2,800 to 3,100 angstroms, emits but little ultraviolet radiation of these wavelengths.

In curve *A* of chart 1 is depicted the relative special energy distribution of the radiation from the gas-filled tungsten lamp. The maximum emission occurs at 10,600 angstroms (1.06 μ in the illustration). The measurements were made on a 1,500 watt gas-filled lamp, but without a reflector such as is used in a therapeutic lamp. The reflector would increase the total intensity in the direction observed. The bulb, which was of clear glass, absorbs practically all the radiation of wavelengths longer than 35,000 angstroms and it absorbs completely all the radiation of wavelengths greater than 45,000 angstroms. The low temperature radiation from the heated glass bulb (some 11 per cent of the total) cannot penetrate deeply into the skin.

The gas-filled tungsten lamp is useful as a source of visible and of short wavelength infra-red radiation of wavelengths less than 15,000 angstroms. About 30 per cent of the total radiation emitted by the gas-filled tungsten lamp is of wavelengths that can penetrate deeply into the skin. The original papers cited here [4] contain data on the spectral energy distribution of the tungsten filament in a gas-filled bulb.

4. *The Violet Ray Lamp.*—One of the standard products of commerce is an incandescent lamp consisting of a helical carbon filament in a bulb of blue glass, sold for decorative purposes and sources of low illumination in assembly rooms. If such lamps have a therapeutic effect, e. g., in stimulating the growth of hair on bald heads, it should be noticeable on patrons of amusement houses. Nevertheless such lamps have been put into special caps and sold for growing hair and for therapeutic purposes.

4. Coblentz, W. W.: Bur. Stds. Sc. Bull. **14**: 115, 1917 (No. 300, 5 cents). Priest: Bur. Stds. Sc. Papers **18**: 225, 1922 (No. 443, 5 cents).

Radiometric tests showed that the intensity of the violet and ultraviolet rays emitted by such a lamp is only one ten-thousandth the total radiation emanating from the lamp. The amount of violet and ultraviolet rays of full sunlight transmitted through the glass bulb of such a lamp was from 1,000 to 1,500 times greater than that of the carbon filament lamp. Observations showed that the intensity of the violet rays of sunlight (skylight) falling on the scalp of a person sitting near a window, but not in direct sunlight, would be from 50 to 150 times that of a blue bulb carbon filament lamp.

Another bit of hokum is a so-called violet ray lamp, consisting of a spark coil to which is attached a glass tube that terminates in a flattened glass bulb, which emits a blue glow when it touches the body. The function of this glass tube is to provide a high resistance to the electric current that comes from the spark coil, so that the patient will not feel the shock too severely, and even if the ultraviolet rays generated could pass through the glass walls of the bulb, they would be too weak in intensity to be effective for therapeutic purposes.

5. *The Nickel and the Tungsten Arc.*—The radiation emitted from the arc vapors between two electrodes of nickel, and of tungsten, consists of numerous fine lines which (chart 2) are not separated when examined with a small spectroscope.

The spectral energy distribution of the arc between two pure nickel rods, 12 mm. in diameter, with tapered ends, operated on 6 amperes, is given in figure 2, from which it may be noted that the nickel arc emits strongly at 230 millimicrons (2,300 angstroms) and especially at 350 millimicrons (3,500 angstroms). These bands are especially conspicuous in certain cored carbons, discussed in a subsequent part of this chapter. The arc of nickel-cord carbons is an excellent source of ultraviolet radiation. Moreover, the material is inexpensive, quiet burning and easy to operate.

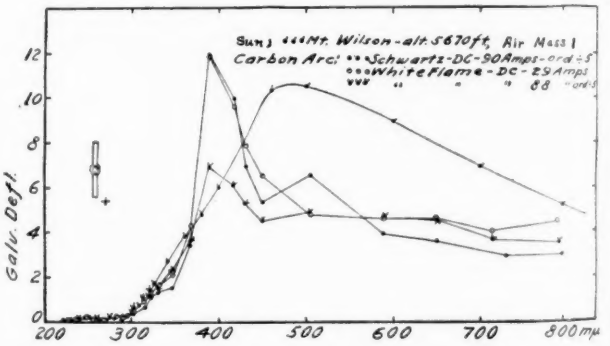

Chart 3.—Spectral energy (intensity) distribution of the sun and of the carbon arc.

The tungsten rods examined were 6.4 mm. in diameter and were the regular imported British stock material used for therapeutic purposes. They were operated on 5 amperes. Because of the formation of a crust of oxide around the electrode, the arc was rather unsteady and hence difficult to operate. The emission spectrum of tungsten is weak in the spectral region of wavelengths shorter than 2,300 angstroms (230 mμ in the illustration).

The odors from the metal arcs are disagreeable, and some vapors may be irritating to the bronchial tubes. In order to eliminate the odors and to secure greater

steadiness in operation, cored carbon electrodes containing oxides of certain metals are commonly used in place of electrodes of pure metals.

6. *The Sun.*—In connection with the following discussion of the radiation emitted by artificial sources, it is relevant to mention the sun—the only natural source available for therapeutic purposes. The temperature of the surface of the sun is above 5,500 C. (9,932 F.), some estimates being 6,000 C. (10,832 F.). The solar radiation intensity, falling on a surface normal to the incident rays in this latitude (38° 50′) at sea level at the noon hour on a clear day, amounts to about 1.2 Gm.-calories per square centimeter per minute and rarely rises to 1.35 Gm.-calories. Less than 0.1 per cent of this amount is ultraviolet of wavelengths that have a strong therapeutic action, at least in preventing rickets.

The intensity of the ultraviolet rays varies greatly with the altitude above sea level (chart 3) and also with the time of day. Only between the hours of 9 a. m. and 3 p. m. (excepting in the three summer months, when least needed) is this ultraviolet component of sufficient amount to be of importance radiometrically, and probably therapeutically. In addition to this variation with the time of day, the amount of vitalizing ultraviolet solar rays available for therapeutic purposes varies with the season of the year, with the altitude and the geographic latitude of the station, and with the almost infinite variety of air pollution and weather conditions that are encountered in different localities.

The intensity of the shortest ultraviolet solar rays transmitted by the atmosphere is extremely small. The intensity at 2,900 angstroms is only one millionth as great as at 3,130 angstroms, where the mercury arc has a strong emission line, and only about one forty-millionth of the intensity of the sun's rays in the visible spectrum, where the intensity is a maximum (chart 3).

7. *The Carbon Arc.*—As already mentioned, the temperature of the surface of the sun is about 5,500 C. (about 9,900 F.). The temperature of the positive electrode of the carbon arc is much lower—about 3,300 C. (about 6,000 F.). The carbon arc is the hottest artificial source of radiation readily obtainable, and in this respect it is the closest approach to sunlight. However, the radiation from the carbon arc is far from being like sunlight. There is a strong emission band in the violet at about 3,890 angstroms (the "cyanogen band," chart 3), and beyond 40,000 angstroms in the infra-red there is a great amount of radiation not present in sunlight. When a window of special glass (e. g., Corex-D) is used, which shuts out the ultraviolet rays of wavelengths shorter than 2,900 angstroms and longer than 40,000 angstroms, the spectral limits are similar to those of sunlight; but the intense cyanogen band remains.

Except for the violet cyanogen band at 3,890 angstroms, the vapors from the electrodes of pure carbon are quite nonluminous. A highly luminous arc is produced with carbons filled with various substances.

Superimposed on the radiation from the arc vapors is the continuous spectrum from the highly incandescent crater of the positive electrode. The result is an intense infra-red spectrum, of wavelengths longer than the solar rays transmitted by the atmosphere. If the arc is surrounded by a glass or a quartz globe, as already mentioned, some of the infra-red rays are excluded; but in turn the surrounding globe becomes heated and emits nonpenetrating infra-red rays with wavelengths of from 50,000 to 120,000 angstroms, which are not present in sunlight. Hence, no exact comparison can be made between the radiation from the sun and the carbon arc.

The crater of the positive electrode emits an intense white light, which, as already mentioned, is mixed with the radiation of the arc vapors. This fact is usually overlooked in discussions of the radiation from the carbon arc. The vapors from the pure carbon arc contribute but a small amount to the total radiation emitted.

In chart 3 is shown the distribution of energy in the ultraviolet and in the visible spectrum of the sun (as observed on Mount Wilson) and of the white flame carbon arc. For convenience in making these comparisons, the radiation intensities (the galvanometer deflections) of the sun and of the carbon arc were set to equality at 300 millimicrons (3,000 angstroms), a procedure that is permissible and in common use.

No appreciable radiation of the sun of wavelengths less than 2,900 angstroms is transmitted by the earth's atmosphere. On the other hand, radiation of wave-

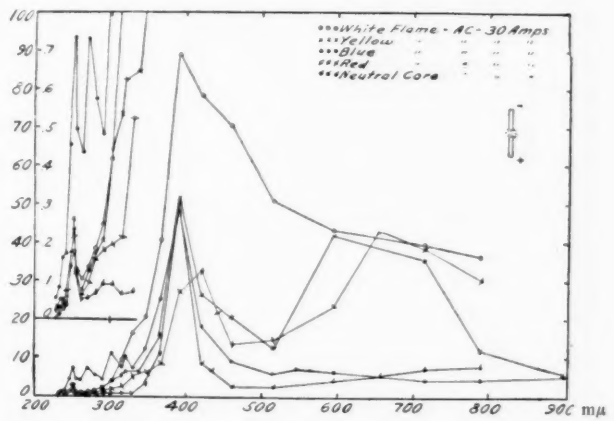

Chart 4.—Spectral intensity (energy) curves of different kinds of carbon electrodes.

lengths out to 2,200 angstroms is observable in the white flame carbon arc. As illustrated in chart 3, the ultraviolet cyanogen band, with its maximum emission at 389 millimicrons (3,890 angstroms), is relatively far more intense than similar wavelengths in the spectrum of the sun. On the other hand, under the same conditions, the radiation of the sun in the visible spectrum is relatively far more intense than that which obtains in the white flame carbon.

As will be mentioned presently, the radiation from the mercury vapor arc in a quartz burner consists of a series of strong emission lines, notably at 2,570, 2,650, 2,804, 2,967, 3,020, 3,130, 3,340 and 3,650 angstroms. In this spectral region the radiation from the vapors of the carbon arc consists of numerous fine lines, which are so close that the spectrum appears continuous and, hence, somewhat like that of sunlight.

When the carbon arc is enclosed with a close-fitting transparent quartz chimney, the gases surrounding the arc expand and force sufficient air out of the chimney to establish an equilibrium in pressure; viz., atmospheric pressure. The amount of oxygen is reduced and the life of the electrode is prolonged. When the arc is extinguished, cold air rushes in. This does not mean, however, that the arc was operating under reduced pressure; i. e., in a partial vacuum. The pres-

sure was the same as or slightly above the atmospheric pressure, but the volume of oxygen (air) was reduced.

In some recent designs of carbon arc lamps the arc is partly surrounded by a metal casing, which reduces the air circulation and prolongs the life of the electrode.

Factors Affecting Carbon Arc Radiation: It has been found that the radiation from the carbon arc depends on (1) the size and the kind of the electrodes (white flame, blue flame, yellow flame, red flame, chart 4); (2) the direction of the current when direct current is used through combinations of neutral cored and impregnated carbons, and (3) the amount of electric current.

This information has been of assistance in making improvements in arc lamps. Assuming that the manufacturer has incorporated into his lamp the latest improvements based on the information available regarding the proper current, the proper size of electrode for a given current, and the direction of the current (if direct current) through the electrodes, it is incumbent on the purchaser of such a lamp to operate it as was intended. This is evident from the increase in the intensities (galvanometer deflections) of the different wavelengths with increase in the current (hence the temperature) in the arc (chart 5). These curves are called "isochromatics," meaning at some particular wavelength.

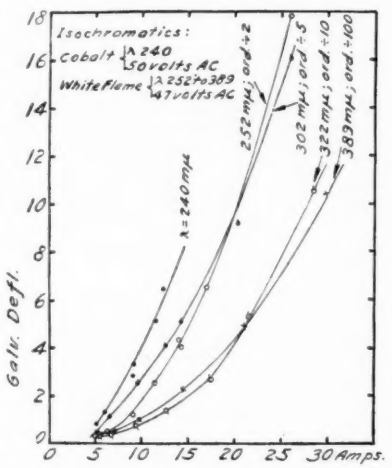
Isochromatics:
Cobalt λ 240 50 volts AC
White flame λ 252 to 389 47 volts AC
λ=240 mμ
252 mμ; ord. ×2
302 mμ; ord. ×5
322 mμ; ord. ×10
389 mμ; ord. ×100
Galv. Defl.
0 2 4 6 8 10 12 14 16 18
0 5 10 15 20 25 30 Amps.

Chart 5.—Increase in intensities of the emission lines in the carbon arc with increase in current.

Amount of current. Take for example the curve of intensities for the wavelength 3,020 angstroms, which is of special interest because of its strong antirachitic action. On 5 amperes the galvanometer deflection was hardly perceptible. With a current of from 25 to 30 amperes, the intensity (galvanometer deflection) was almost 100 times greater.

Size of electrodes. Suppose the operator is using carbon electrodes about 12 mm. in diameter, which require from 25 to 30 amperes in order to attain the proper temperature. It is evident that on 10 amperes he would obtain less than one-tenth the intensity available. Moreover, the arc would sputter and would burn unsteadily. To avoid the sputtering, the electrode of the carbon arc lamps, with a current of from 8 to 10 amperes, should be only from 6 to 8 mm. in diameter.

As a general rule, high amperage arcs are more efficient than the low amperage arcs in the production of ultraviolet and visible radiation, relative to the total infra-red radiation produced. All carbon arcs emit considerable nonpenetrating infra-red radiation of wavelengths longer than 40,000 angstroms not present in sunlight. Aside from the production of a sensation of warmth, there is probably no important physiologic reaction that could not be produced by the above-described, simpler sources of infra-red radiation.

Data on the radiation from the carbon arc have been published elsewhere.[5] To simplify the discussion, it will be sufficient to depict the spectral energy distribution of representative samples of cored carbons containing substances that, in the state of incandescent vapor, have bands of selective emission in certain parts of the spectrum. These spectral energy curves, throughout the ultraviolet, the visible spectrum (from 390 to 750 millimicrons, 3,900 to 7,500 angstroms) and to 800 millimicrons (8,000 angstroms) in the infra-red spectrum, are illustrated in figure 4. The inset on the left-hand side of figure 4 gives a magnified (ten times) illustration of the intensities extending from 250 to 300 millimicrons.

Direction of current. The carbon electrodes used were 12.7 mm. in diameter and were operated on 30 amperes, alternating current. The effect of direct current is to raise the temperature of one electrode considerably higher than the average that obtains when alternating current is used. This increases the intensity of the cyanogen band at 3,890 angstroms, especially in the blue flame arc, but it does not have so marked an effect on the intensity of the radiation in the short wavelength ultraviolet and in the visible spectrum.

Kind of electrodes. It may be noticed (chart 4) that in the neutral core carbon arc (a practically pure carbon) the ultraviolet radiation of wavelengths less than 320 millimicrons (3,200 angstroms) is extremely weak, the radiation being concentrated almost entirely in the cyanogen band, with a maximum at 389 millimicrons (3,890 angstroms). In contrast, in the blue flame ("therapeutic B") carbon arc, the ultraviolet radiation of wavelengths less than 310 millimicrons (3,100 angstroms) exceeds that of all the other arcs illustrated (chart 4.).

In the yellow flame ("therapeutic C") carbon arc there is considerably more radiation, extending from 2,900 to 3,200 angstroms (290 to 320 mμ in the illustrations) in the ultraviolet, which is weak in the neutral core carbon arc. In the visible spectrum there is a strong emission extending from 5,000 to 7,500 angstroms.

The red flame ("therapeutic E") carbon arc is conspicuous for its intense emission, extending from 5,500 angstroms in the orange to beyond 7,500 angstroms in the red.

The white flame ("therapeutic A") carbon arc is conspicuous for its relatively low spectral emission in the ultraviolet of wavelengths shorter than 2,900 angstroms, its high emission in the region extending from 4,500 to 5,000 angstroms, which is lacking in the other carbon arcs just described. Owing to the intense radiation in the cyanogen band at 3,890 angstroms (chart 3), the color of the light emitted by the white flame carbon is a more bluish white than sunlight. However, as already mentioned, when the arc is covered with a suitable glass chimney, which absorbs the ultraviolet rays shorter than 2,900 angstroms and the infra-red rays longer than 40,000 angstroms, the white flame carbon arc is the closest approach to sunlight. But it is still far from being an exact match with sunlight in spectral energy distribution. It remains to be determined whether this difference in spectral energy distribution is of importance biologically.

(To be continued)

5. Coblentz, W. W.: Tr. Illum. Engin. Soc. **23**: 247 (March) 1928. Coblentz, Dorcas and Hughes.[2]

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING GENERAL DECISIONS.

RAYMOND HERTWIG, Secretary.

ACIDOSIS CLAIMS IN LAY ADVERTISING

Acidosis and acid claims, and the words "acidosis," "acidity" and "acid" are frequently used in advertising to play on vague fears of the public. The usual well-balanced diet includes many alkali yielding foods—milk in its various forms, fruits and vegetables. Acid forming diets are not a practical nutritional problem because a good modern mixed diet adequate in minerals and vitamins can scarcely be potentially acid. It is appropriate to call attention to the fact that certain foods are potentially alkaline, or yield alkaline mineral residues in the body.

Acidosis is a medical name for a morbid condition of diminution in the reserve supply of fixed alkali in the blood and body fluids. Most people have no conception of the true meaning of the word and are quite likely to confuse it with gastric hyperacidity or "acid stomach," or to conceive of it as "acid blood," a condition which would be incompatible with life. The term "acidosis" is so little understood that its use in any advertising except that restricted to the medical profession is misleading and consequently disapproved.

VITAMIN E CLAIMS FOR PUBLIC ADVERTISING

There are at present no adequate scientific data establishing the rôle of vitamin E in human dietetics. This vitamin is present in many common foods, the necessary amount, so far as is known, being acquired with any ordinary diet. Statements or claims referring to vitamin E in advertising to the public imply a need for special sources of the vitamin that is not warranted by present knowledge. Claims for vitamin E, therefore, other than mere statement of its presence, should not be used on food labels or in advertising to the public.

VITAMIN FORTIFICATION OF FOODS

Tentatively no objection is taken to the reasonable fortification of food products, whether intended for special diets, convalescents or general use, with vitamin concentrates or with natural foods rich in vitamins. There is no convincing evidence, however, that fortification of foods generally serves any public necessity or that it is in the best interest of public welfare; therefore such practice is not to be encouraged.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

ALPHA-LAC

Manufacturer.—Alpha Milk Laboratories, Sacramento, Calif.

Description.—A spray dried homogenized mixture of skim milk, lactose, dextrose, coconut oil, cacao butter and cod liver oil.

Manufacture.—The milk used is grade A as produced under the dairy laws of California and the health regulations of the city of Sacramento. The acidity as received at the plant is about 0.13 per cent lactic acid; the average bacteria count is less than 10,000 per cubic centimeter.

As soon as received the milk is drawn into the "vacuum" pan without preheating, where it is condensed to about 18 per cent solids content at a temperature below 54 C. The condensed milk with the other formula ingredients is pasteurized for thirty minutes at 62 C. The mixture is homogenized and spray dried at as low a temperature as is practical (82 C.). The dry powder is quickly cooled and packaged. In the course of the entire operation the ingredients are in contact with stainless steel or glass.

Analysis (submitted by manufacturer).—

	per cent
Moisture	1.1
Ash	2.5
Fat (ether extract)	28.4
Protein (N × 6.38)	11.3
Crude fiber	0.0
Carbohydrates (by difference)	56.7
Titratable acidity as lactic acid	1.1

Calories.—5.3 per gram; 151 per ounce.

Claims of Manufacturer.—A food for infants to be used in place of breast milk, when mother's milk is not available, under the directions of the physician. Contains 2 U. S. P. (1934, Revised) vitamin D units per gram.

CELLU JUICE-PAK SLICED PINEAPPLE

Distributor.—The Chicago Dietetic Supply House, Inc., Chicago.

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Processed, peeled and cored sliced pineapple packed in undiluted juice without added sugar.

Manufacture.—The method of manufacture is essentially the same as for Doles 1, 2 and 3 Hawaiian canned pineapple products, THE JOURNAL, April 8, 1933, page 1106. Partially neutralized unsweetened juice is used to fill the cans.

Analysis (submitted by distributor).—

	per cent
Moisture	83.7
Ash	0.4
Fat (ether extract)	0.1
Protein (N × 6.25)	0.3
Reducing sugars as invert sugar	7.5
Sucrose	5.9
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	15.2

Calories.—0.6 per gram; 17 per ounce.

Claims of Manufacturer.—Packed in undiluted pineapple juice without added sugar.

STOKELY'S FOR BABY SPECIALLY PREPARED STRAINED CARROTS

SEASONED WITH SALT

Manufacturer.—Stokely Brothers & Company, Inc., Indianapolis.

Description.—Strained carrots, seasoned with salt, largely retaining the natural vitamins and minerals.

Manufacture.—Selected, fresh carrots are washed, peeled, steamed in a closed kettle, sieved in a steam atmosphere, canned and processed as described for Stokely's Strained Green Beans, (THE JOURNAL, May 26, 1934, p. 1763).

Analysis (submitted by manufacturer).—

	per cent
Moisture	89.7
Total solids	10.3
Ash	0.9
Sodium chloride	0.3
Fat (ether extract)	0.04
Protein (N × 6.25)	1.1
Reducing sugars as dextrose	3.0
Sucrose (copper reduction method)	2.2
Crude fiber	0.8
Carbohydrates other than crude fiber (by difference)	7.5
Alkalinity number (cc. normal acid per gram ash)	8.1
*p*H	5.1

Calories.—0.3 per gram; 8.5 per ounce.

Vitamins.—The natural vitamin content is retained in large measure in the manufacturing process by the use of equipment and procedure which exclude incorporation of air; the vegetable material is exposed to steam only.

Claims of Manufacturer.—Supplementary to the infant milk diet, and valuable for children and adults on soft diets. Has smooth consistency and supplies desirable bulk without roughness. The straining renders the nutrient content readily available for digestion. Scientifically prepared to retain in high degree the natural flavor, mineral and vitamin values. Seasoned to bring out full flavor and packed in enamel lined cans. Requires only warming for serving.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, JULY 21, 1934

RATIONAL DIETARY ADVICE

In the knowledge of nutrition there have been great advances of late, which are destined to have an important influence on practical dietetics and dietotherapy; but the responsibility—and the opportunity—for promoting, expounding and applying the novelties have been left largely in the hands of nonmedical persons. Many of the latter are well tutored, understanding students of the science of nutrition and have proved themselves to be capable in leadership. This is true of many of the devotees of modern home economics. On the other hand, the quack and even the well meaning faddist have been quick to seize the opportunities that a more critical medical attitude would tend to thwart. Consequently, as a result of the propaganda of various food faddists, commercial or otherwise, Bogert [1] points out, competent and sane advice about food has been a good deal discredited, since the average person does not appear to be able to discriminate between those who know what they are talking about and those who do not. A great many people therefore attach themselves, Bogert adds, to one of the following groups: (1) those who pooh-pooh all advice about diet and eat whatever they want with indifference or with defiance; (2) those who become overanxious concerning food and often overcredulous as to food theories, so that they try all the advice they can get, either at one time or in series, ending up in a sad state of mental confusion; and (3) those who become zealots, adopting some particular food fad and sticking to it with a perseverance that would be admirable in a better cause.

One of our contemporaries [2] has incriminated the physician to some extent for the sorry situation that prevails. The practice of medicine has always been rife with ideas, fads and fancies about diet. This was true of the medicine of the ancients, the tribal witch doctors and the American Indian medicine men. While simple concoctions of herbs, berries, roots, leaves and flowers characterized the earlier attempts at nutritional therapy, extreme complexity marks present practices because of the many discoveries in the science of nutrition and the resultant stimulation of food fads and misconstrued theories that defy extermination. The physician, since his advice carries weight with his patients, has been blamed not only for the perpetuation of many old ideas about nutrition but also for the adoption of many of the present unsound dietary practices and food fads. Among the topics for criticism are the unwarranted attacks on meat because it is "hard on the kidneys," the "magic password autointoxication," and the "psychically pandemic acidosis."

To combat the unfortunate situation that has been described, the *Journal of the American Dietetic Association* offers a constructive plan. It suggests that occasional joint meetings of physicians, especially internists, together with dietitians, nurses and biochemists, and physiologists who may be interested, should promote the health dissemination of the newer knowledge of nutrition. Then the essentials for the foundation of a normal diet for persons in good health, and the requisite changes for persons with various illnesses, would become better known to all physicians, nurses and dietitians. Scientific articles on nutrition should replace the syndicated food fad columns in daily papers and discourage the adoption of fanatical and pseudoscientific diets.

1. Bogert, L. Jean: Nutrition and Physical Fitness, Philadelphia, W. B. Saunders Company, 1931.
2. "Too Much Acid," editorial, J. Am. Dietet. A. **9**: 498 (March) 1934.

STEROLS IN MILK

Milk possesses a unique value in nutrition. An ideal food for the infant, it still remains the cornerstone around which dietaries are effectively built long after the demand for increased energy requires the replacement of part of the liquid milk with foods of greater caloric value. Chemical analysis has shown that proteins, fat, carbohydrate and salts are to be found in milk, and nutritional studies have demonstrated that these constituents together with the contained vitamins are peculiarly valuable in promoting growth and in maintaining physiologic well being. In line with the current tendency to examine the possible nutritive value of both organic and inorganic constituents present in food materials in mere traces, milk has recently been studied anew by methods not ordinarily applied to food analysis. Thus, Blumberg and Rask,[1] using the spectrograph, studied the ash of nineteen samples of milk; the spectrum of the ash was photographed and the presence of the elements detected by searching for their "raies ultimes" on the spectrogram. In addition to the calcium, phosphorus, magnesium, potassium and sodium present in considerable concentrations, traces of barium, boron, copper, iron, lithium, rubidium, strontium, titanium and zinc were found. Again in subjecting the fatty acids of butter fat to examination for linoleic and

1. Blumberg, Harold, and Rask, O. S.: J. Nutrition **6**: 285 (May) 1933.

linolenic acids, Eckstein [2] has found a concentration of 0.21 and 0.12 per cent, respectively, for these compounds. If, as it appears, these fatty acids are "essential" in the nutritional sense, there is here another explanation for the unique food value of milk. There is thus slowly accumulating information on the finer details of the composition of milk, which in its fulfilment will doubtless explain much of the recognized excellence of this fluid from the point of view of nutrition. One commentator [3] has referred to this growing situation as the challenge of nutrition to the chemist.

A recent contribution deals with the cholesterol content of milk. Ansbacher and Supplee [4] were led to undertake this investigation because of the growing importance of the lipids, notably the sterols. It is well known that ergosterol, one of the sterols, is endowed with marked antirachitic properties when irradiated with ultraviolet energy and, as this sterol usually accompanies cholesterol in nature, the determination of the distribution of the latter lipid in milk might have considerable importance in elucidating the mechanism whereby both liquid and dried milk is rendered antirachitic by irradiation. As might be expected, the butter fat fraction of the milk contained the greatest concentration of sterol, about 0.3 per cent; however, it is significant that the butter fat did not contain all of the sterol in the milk. The skim milk, whey and casein all had sterol but the lactalbumin showed 0.18 per cent, more than half the concentration of the butter fat. It was observed that the sterol combined with the lactalbumin is more constant than that of the other milk constituents; indeed, the sterol of the whole milk seems to be independent of the fat content.

Previous studies have demonstrated that butter fat on irradiation with ultraviolet energy becomes active in curing rickets. Ansbacher and Supplee subjected a suspension of lactalbumin to similar irradiation and demonstrated that the sterol combined with this protein could be thus rendered antirachitic. These investigators are inclined to view the sterol component as the so-called prosthetic group of the protein, much as is nucleic acid in nucleoprotein and hematin in hemoglobin. The lipoprotein group has never been well defined; the sterol-lactalbumin combination is one of several recently described substances that are lending increased biochemical significance to this group of compound proteins.

A recent comparison [5] of several therapeutic agents on the basis of their efficacy in curing infantile rickets has indicated that, when judged on the number of rat units of vitamin D, irradiated milk was superior to milk from cows fed irradiated yeast, to cod liver oil and to viosterol. It appears that the effect of irradiating milk with ultraviolet energy is to produce a product of peculiar efficacy in the treatment of human rickets. It is known that such treatment of ergosterol alone yields a series of products, one of which is vitamin D. The foregoing studies on the sterols in milk suggest that the combination of provitamin D with the milk proteins may enhance the usual effect of irradiation on this sterol.

2. Eckstein, H. C.: J. Biol. Chem. **103:** 135 (Nov.) 1933.
3. Mendel, L. B.: Address to American Association for the Advancement of Science, Northeastern Section, Boston, Dec. 29, 1933.
4. Ansbacher, S., and Supplee, G. C.: J. Biol. Chem. **105:** 391 (May) 1934.
5. Hess, A. F., and Lewis, J. M.: An Appraisal of Antirachitics in Terms of Rat and Clinical Units, J. A. M. A. **101:** 181 (July 15) 1933.

EXPERIMENTAL ELEPHANTIASIS

The history of medicine shows that, whenever it has been possible to imitate experimentally the phenomena of human disease, the way has usually been paved for a better understanding of the malady and often a greatly improved facility of diagnosis, prognosis and treatment. Perhaps recent investigations will initiate some progress in present conceptions of lymphedema and elephantiasis. As far as the latter belongs to the acquired type, lymph stasis due to various etiologic agents has been assumed to play the most important part. The majority of the cases in the tropics, where elephantiasis occurs as an endemic disease, are due to filariasis caused by infestation with Wuchereria bancrofti. In temperate climates the same end results seem to follow a variety of experiences. Heretofore attempts to produce lymph stasis and permanent lymphedema in extremities has not been especially successful, presumably owing to the readiness with which somehow a restoration of lymph drainage occurs.

Investigations [1] at the Harvard School of Public Health in Boston seem to have been more fortunate. By successive cannulation of lymphatic trunks of the extremities of animals, followed by injections of crystalline silica and quinine hydrochloride, obstruction finally occurred. Lymphedema developed after such injections and eventually became pronounced. The protein content of the edema fluid rose slowly to above 4 per cent. With the establishment of lymphedema the subcutaneous connective tissue increased and the leg gradually became elephantiatic. It is reported that, when the lymphatics are blocked in such experiments, water and salts continue to pass in and out of blood capillaries but extravascular protein cannot move from the part except by diffusion of the tissue fluid through the tissue spaces. On first establishment of lymph block, these spaces are extremely small and diffusion through them is slow, but as the part enlarges the tissue spaces become quite noticeable even though there has been large new formation of fibrous tissue. Under these circumstances the tissue follows gravity rapidly. One of the first effects of lymphatic block is the appearance of varicose lymphatic trunks. These are seen as hugely dilated elements. When cannulated centrally lymph flows out of the cannula plentifully, indicating the incompetence of the valves. As blockage persists, lymph capillaries in the skin and subcutaneous

1. Drinker, C. K.; Field, Madeleine E., and Homans, John: The Experimental Production of Edema and Elephantiasis as a Result of Lymphatic Obstruction, Am. J. Physiol. **108:** 509 (June) 1934.

tissue dilate widely and their walls become somewhat thickened.

According to the Harvard physiologists, overgrowth of connective tissue and dilatation and thickening of lymphatic capillaries begin to be noticeable when lymphedema has been present for two months. These changes are those underlying elephantiasis. It is well known that in the presence of chronic lymphatic obstruction the part involved becomes notably susceptible to infection. Drinker and his associates [1] aver that, whatever may be the effect of acute lymphatic block in restraining acute infection, there can be no doubt that when a part loses lymphatic drainage permanently, so that with each period of activity there is no movement of fluid from the tissues to the lymphatics out of the region, there develops a surprising susceptibility to streptococcic infection. Periods of repeated infection intensify the changes in the tissue fluid which result from lymphatic obstruction alone, and it is not surprising, Drinker adds, that they have been considered the underlying cause of elephantiasis. They are not the essential cause, but they do accelerate the new growth of connective tissue.

Current Comment

SUDDEN DEATH AFTER INJECTION OF HUMAN SERUM

While normal human serum is presumably the least toxic therapeutic agent that can be used in attempting passive immunization of children, the opinion that such serum can be injected without danger into children is not justified by clinical experience. European clinicians [1] report that the administration of human serum to children under 14 years of age is sometimes followed by severe or even serious serum disease in approximately 3 per cent of the cases. The term "auto-anaphylaxis" has been suggested as a descriptive title for this type of serum shock.[2] The term "iso-anaphylaxis," recently suggested,[3] is, however, more nearly in accord with recent immunologic nomenclature. Assuming that the adult human serums are selected and prepared by competent clinicians and laboratory technicians so as to rule out all dangers from the selection of pathologic serums or from subsequent bacterial contamination, the most obvious explanation of iso-anaphylactic toxicity would be that it is due to physical or chemical denaturation of normal serum proteins. This is probably not the full explanation, however, for investigators [4] report equally serious serum disease following the injection of absolutely fresh, nonheated and demonstrably sterile normal human serum, to which antiseptic or chemical preservatives had not been added. A second obvious explanation would be to assume that the iso-allergic toxicity is due to circulating food proteins [5] or to other circulating environmental allergins,[6] to which the children receiving the serum had a hereditary or acquired specific sensitivity. If this is so, one evident precaution would be to withdraw no serum from donors until at least eight hours had elapsed after the last protein meal. Less plausible explanations are based on the still hypothetical differences in tissue and serum specificity between young children and adults,[7] on the possibility of allergic shock due to the use of adult serums of an alien blood group and on the conceived possibility of "reversed anaphylaxis." [8] The latter would be due to the presence of specific or nonspecific "antibodies" in many normal adult circulations [9] against antigens conceivably present in certain children. Thus far, but one case of iso-allergic serum disease has been reported in American literature.[10] There are several still unreported cases, however, in the recent California experience. No fatality is as yet on record directly attributable to iso-anaphylactic shock.[11]

1. Netter, A.: Compt. rend. Soc. de biol. **78:** 505, 1915.
2. Nelli, A. R.: Rinasc. med. **7:** 523 (Nov. 1) 1930.
3. Manwaring, W. H.: California & West. Med., to be published.
4. Marie, P. L.: Compt. rend. Soc. de biol. **79:** 149, 1916.
5. Donnally, H. H.: J. Immunol. **19:** 15 (July) 1930.

FACTORS IN THE REGENERATION OF HEMOGLOBIN

For more than a decade it has been evident that iron is not always the only factor that needs to be supplied to the body in conditions that call for regeneration of the blood cells. Obviously the ferruginous blood pigment hemoglobin cannot be synthesized in the absence of available iron, which is one of its component elements. It has been established since 1920 that liver contains abundant material, still undetermined in character, that can be converted by anemic animals into hemoglobin and red blood cells. One might well expect, therefore, that in protracted anemia, such as can be produced by repeated hemorrhage, the rich store of hemoglobin production factors in the liver of the affected individual would be greatly diminished. The recent studies of Whipple and Robscheit-Robbins [1] at the University of Rochester School of Medicine and Dentistry afford the surprising information that such depletion is by no means a regular occurrence. Thus it was noted that anemic horse liver contains no less of the hemoglobin production factors than do the normal controls. Evidently the normal liver guards its reserve of hemoglobin production factors with the utmost care, and repletion must be prompt and effective. In human cases of pernicious anemia and aplastic anemia, Whipple and Robscheit-Robbins have reported a surplus accumulation of these hemoglobin producing factors in the liver, due possibly to the lack of outlet for this material, as the body cannot fabricate red cells due to a deficiency factor (pernicious anemia) or to lack of red marrow (aplastic anemia). Only in severe liver disease with signs of failure of liver func-

6. Cohen, M. B.; Ecker, E. E.; Breitbart, J. R., and Rudolph, J. A.: J. Immunol. **18:** 419 (June) 1930.
7. Picado, C.: Compt. rend. Soc. de biol. **102:** 631 (Nov. 29) 1929.
8. Opie, E. L.: J. Immunol. **17:** 329 (Oct.) 1929.
9. Friedberger, E.; Bock, G., and Fürstenheim, A.: Ztschr. f. Immunitätsforsch. **64:** 294, 1930.
10. Dooley, Parker: Serum Disease, J. A. M. A. **99:** 1778 (Nov. 19) 1932.
11. The recent California death was due to a grossly incompetent technician, the injected serum containing a highly virulent strain of Staphylococcus hemolyticus. To obviate this danger, all California laboratories are now under effective control of the state board of health.

1. Whipple, G. H., and Robscheit-Robbins, F. S.: Hemoglobin Production Factors in the Anemic Horse Liver, Am. J. Physiol. **108:** 270 (May) 1934.

tion did they find a significant fall in the concentration of hemoglobin production factors in the human liver. This does not mean that the store of iron is not depleted in the anemic individuals. Whipple and Robscheit-Robbins venture to argue that the liver is busy with the manufacture of parent hemoglobin building material and that during moderately severe anemia caused by loss of blood this mechanism is accelerated and no depletion of reserve is permitted in spite of a severe drain from loss of hemoglobin by bleeding. In fact, if one considers the observation that the iron content is much decreased in these anemic livers and that iron has a definite influence on hemoglobin regeneration, they add, one may properly hold that the anemic liver actually contains more of the organic factors that promote hemoglobin regeneration than does the nonanemic control liver. One therefore may be driven to the admission that the liver in moderate anemia (compared with controls) does contain much less iron and therefore more organic factors that promote hemoglobin regeneration.

Association News

THE ATLANTIC CITY SESSION

Eighty-Sixth Annual Session to Be Held in June

The Eighty-Sixth Annual Session of the American Medical Association will be held in Atlantic City, N. J., June 10 to 14, 1935.

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, Central daylight saving time. The speaker will be Dr. W. W. Bauer. The next three broadcasts will be as follows:

July 26. The First Month.
August 2. Dog Days.
August 9. Death Angel.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Charles A. Mohr, Mobile, resigned as health officer of Mobile County, effective July 1.——Dr. Charles A. Thigpen, Montgomery, recently received the honorary degree of doctor of laws from the University of Alabama.——Dr. Robert L. Allen has assumed his duties as medical officer in charge of the marine hospital at Mobile, succeeding Dr. William S. Bean Jr.

ARKANSAS

Society News.—The Ouachita County Medical Society was recently addressed in Camden by Drs. Henry F. DeWolf on "Lymphogranuloma Inguinale"; Ernest H. White, "Pituitrin in Obstetrics," and Daniel R. Hardeman, Little Rock, "Some Phases of Intravenous Medication."——At a meeting of the Madison County Medical Society in Huntsville, June 5, speakers were Drs. William R. Brooksher, Fort Smith, value of the roentgen ray to the general practitioner; Sidney J. Wolfermann, Fort Smith, bedside diagnosis of diseases of the upper abdomen; and Frank N. Gordon, Fayetteville, policies of the veterans' administration.——The Tri-County Clinical Society was addressed in Hope, recently, by Dr. William S. Kerlin on "Angina Pectoris"; Forno M. Talbot, D.D.S., "Dietary Deficiencies as Related to Dental Diseases," and Dr. Douglas L. Kerlin, Shreveport, treatment of the psychoneuroses.——Speakers before the Ninth Councilor District Medical Society at Eureka Springs, June 5, included Drs. Milton C. John, Stuttgart, on "Office Treatment of Hemorrhoids"; Ira F. Jones, Fort Smith, "Intestinal Obstruction," and Fergus O. Mahony, El Dorado, "The Practitioner of Medicine in this Changing World."

CALIFORNIA

Department of Legal Medicine Created.—The College of Medical Evangelists, Los Angeles, has recently created a department of cultural and legal medicine. Dr. Percy Tilson Magan, professor of public health, has been appointed to head the new department.

Changes at Stanford.—Stanford University School of Medicine, San Francisco, announces the following changes on its faculty, effective September 1:

Dr. Frank H. Rodin promoted to assistant clinical professor of surgery (ophthalmology).
Dr. Alfred Baker Spalding, emeritus professor of obstetrics and gynecology.
Dr. Dohrmann Kaspar Pischel, associate clinical professor of surgery (ophthalmology).

Committee to Study Health Insurance.—At the recent annual convention of the California Medical Association, a committee was appointed to make a survey of health insurance. Members are Drs. Alson R. Kilgore and Rodney A. Yoell, San Francisco; Robert A. Peers, president-elect of the California Medical Association; William R. Molony, Los Angeles, president of the state board of medical examiners, and Harry H. Wilson, Los Angeles, secretary, Los Angeles County Medical Society. Dr. Peers, who is going abroad soon, is expected to study health insurance in Europe.

Death from Rabies.—The first death from rabies in a human being in California in two years occurred in April in a child 3 years of age. Bitten on the right cheek by a stray dog, March 30, the child was taken at once to a clinic. Antirabic treatment was started within three hours after the child had been bitten and twenty-one doses were administered. On the twenty-second day, one day after the treatment had been completed, symptoms of rabies developed. The child died on the third day. The diagnosis was confirmed by finding characteristic intracellular Negri bodies in the brain. Other children were bitten by this dog, which was located and placed under observation. It died four days later.

CONNECTICUT

Personal.—Dr. Samuel C. Harvey, professor of surgery, Yale University School of Medicine, has been elected president of the Association of the Yale Alumni in Medicine.——Dr. Harvey Cushing, New Haven, was awarded an honorary degree by Syracuse University, Syracuse, N. Y., June 4.

Public Health Meeting.—The Connecticut Public Health Association held its annual meeting at the Laurel Heights State Tuberculosis Sanatorium, Shelton, June 27, under the presidency of Dr. John L. Rice, now health officer of New York. Dr. Edward J. Lynch, superintendent of the sanatorium, gave the address of welcome.

Dr. Greenburg Named Acting Health Officer.—Dr. Leonard Greenburg, assistant clinical professor of public health at Yale University School of Medicine, has been appointed acting health officer of New Haven. Dr. Greenburg succeeds Dr. Herbert R. Edwards, who is now directing the tuberculosis program in New York City under Health Commissioner John L. Rice, formerly health officer of New Haven. In 1923 Dr. Greenburg received the degree of doctor of philosophy from Yale University and in 1930 the degree of doctor of medicine. He was a member of the U. S. Public Health Service from 1918 to 1932.

DISTRICT OF COLUMBIA

Society News.—Dr. Elizabeth A. Kittredge was elected president of the Women's Medical Society of the District of Columbia at its recent annual meeting; Dr. Edith SeVille Coale read a paper on "Undulant Fever."——Dr. Sterling Ruffin was recently elected president of the Washington Heart Society and Dr. James W. Esler, secretary.

Personal.—Georgetown University conferred the honorary degree of doctor of laws on Major Edgar Erskine Hume at its annual commencement, June 11. Dr. Hume is librarian of the Army Medical Library.——Alice C. Evans, bacteriologist

of the U. S. Public Health Service, received the honorary degree in medicine from the Woman's Medical College of Pennsylvania, Philadelphia, June 6. —— Dr. James P. Leake, senior surgeon, U. S. Public Health Service, has been relieved from duty in the division of sanitary reports and statistics and assigned to duty in the division of scientific research, effective June 23.

Health at Washington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities, with a total population of 37 million, for the week ended July 7, indicate that the highest mortality rate (18.8) appears for Washington, and for the group of cities as a whole, 10.8. The mortality rate for Washington for the corresponding period last year was 14.5, and for the group of cities, 9.6. The annual rate for eighty-six cities for the twenty-seven weeks of 1934 was 12, as against a rate of 11.5 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

ILLINOIS

Society News. — Speakers before the Whiteside County Medical Society in Prophetstown, June 26, were Drs. Walter H. Nadler and Merritt Paul Starr, Chicago, on diabetes and control of edema in congestive heart failure by diuresis, respectively.

Chicago

Society News.—Dr. Charles H. Phifer was installed as president of the Chicago Medical Society at its recent annual election, and Dr. Julius H. Hess was named president-elect. ——Dr. Edward L. Cornell was named president-elect of the Chicago Gynecological Society, June 22, and Dr. Irving F. Stein was installed as president. Dr. Charles Edwin Galloway is secretary.

University News.—Dr. Harry L. Huber has been promoted to associate clinical professor of medicine, Division of Biological Sciences, University of Chicago, effective July 1. Dr. Rudolph Schindler, Munich, has been appointed visiting professor of medicine in the division.——Dr. Albert E. Luckhardt was recently appointed associate clinical professor in the department of medicine at Loyola University School of Medicine.

INDIANA

Personal.—Dr. Charles P. Emerson, formerly dean, Indiana University School of Medicine, was awarded the honorary degree of doctor of science by Amherst College, Amherst, Mass., his alma mater. —— Dr. Leslie M. Jones has been appointed superintendent of Epworth Hospital, South Bend, effective June 11.

University News.—A collection of thirteen medical works, written from seventy-five to a hundred years ago, has been contributed to the Indiana University Medical Center Library by Dr. Stephen B. Sims, Frankfort.——The departments of occupational and physical therapy at the Indiana University Medical Center, Indianapolis, were recently consolidated to promote efficiency and economy.

Outbreak of Typhoid. — Eleven cases of typhoid were reported in an outbreak in New Bethel, June 20. Eight of the eleven persons attended a public dinner in the town, May 8. Dr. Oscar D. Ludwig, health commissioner of Marion County, was of the opinion that a carrier was responsible, although at the time of his report a definite source for the outbreak had not been determined. New Bethel has a population of about 350.

IOWA

Personal.—Dr. John H. Peck, Des Moines, has resigned as president of the Iowa Tuberculosis Association, because of his increasing work as medical director of the organization. T. P. Eslick, attorney, was elected president for the interim until the annual meeting of the association in Cedar Rapids in September. —— Dr. Frank Harold Reuling, Waterloo, received the merit award of Northwestern University Alumni Association on "illumination night" in Evanston, Ill., preceding the commencement exercises, June 15. The award is given annually to alumni for "worthy achievement which has reflected credit upon their alma mater."

Twin Lakes Assembly.—A dry diagnostic clinic constituted the program of the twelfth annual assembly of the Twin Lakes District Medical Society, at Burns' Alhambra Pavilion, Twin Lakes, Rockwell City, June 21. A talking motion picture on "Forceps Delivery" made by Dr. Joseph B. De Lee, Chicago, opened the program. Dr. Edward Starr Judd, Rochester, Minn., conducted a clinic in general surgery; Dr. Karl A. Menninger, Topeka, Kan., neuropsychiatry; Dr. Adolph Sachs, Omaha, heart disease, and Dr. Henry F. Helmholz, Rochester, Minn., pediatrics. An address was delivered by Dr. Edward H. Skinner, Kansas City, on "Collective Individualism versus Regimentation in Medical Practice." Dr. William M. Shipley, Ottosen, was elected president at this session, and Dr. Paul W. Van Metre, Rockwell City, reelected secretary. The Twin Lakes District Medical Society is composed of the medical societies of Calhoun, Carroll, Greene, Hamilton, Humboldt, Ida, Sac, Kossuth, Pocahontas, Webster and Wright counties.

Society Conducts Laboratory Course. — The speakers' bureau of the Iowa State Medical Society is conducting a laboratory course in Des Moines, July 16-28. Round table discussions are led by the following physicians:

Clarence W. Baldridge, Iowa City, and Frederick H. Lamb, Davenport, Hematology.
Julius S. Weingart, Des Moines, and Milford E. Barnes, Iowa City, Immunology.
Daniel J. and Mrs. Glomset, Des Moines, Blood Chemistry.
John L. Kestel, Waterloo, Urinalysis.
Irving H. Borts, Iowa City, Bacteriology.
John T. Strawn, Des Moines, Gastric Analysis and Stool Analysis.
Frank P. McNamara, Dubuque, Tissue Examination.
Herbert W. Rathe, Waverly, Metabolism.
Benjamin F. Wolverton, Cedar Rapids, Electrocardiography.
Harold Dabney Kerr, Iowa City, and Thomas A. Burcham, Des Moines, Roentgen Rays.

Laboratory demonstrations in these subjects are also a part of the course.

MICHIGAN

Society News.—Dr. John E. Gordon gave a paper before the Muskegon County Medical Society in Muskegon, June 22, on "Comparison of American and European Practice in Control of Communicable Diseases."——At a meeting of the Saginaw County Medical Society, June 19, Dr. William S. O'Donnell, Detroit, spoke on nephritis in children. —— Dr. Hans von Hattingberg, professor of psychotherapy, Berlin University, addressed the Detroit Society of Neurology and Psychiatry, June 28, on "The Psychotherapeutic Movement."

Faculty Changes at State University.—Announcement is made of the following promotions on the faculty of the University of Michigan Medical School, Ann Arbor, effective July 1:

Dr. John Morris Dorsey, associate professor of psychiatry.
Dr. Cameron Haight, assistant professor of surgery.
Dr. Harold William Jacox, assistant professor of roentgenology.
Dr. Vincent C. Johnson, assistant professor of roentgenology.
Dr. Edgar A. Kahn, associate professor of surgery.
Dr. Konstantin Lowenberg, assistant professor of neuropathology in psychiatry.
Dr. Eugene Breckenridge Potter, associate professor of surgery.

MINNESOTA

Personal.—Dr. Edward C. Rosenow, Rochester, received the honorary degree of doctor of science from Carleton College, Northfield, June 11, and Dr. Donald C. Balfour, Rochester, the degree of doctor of laws.——Dr. Robert B. J. Schoch has been appointed city health commissioner of St. Paul; he was chief deputy coroner of Ramsey County from August 1919 until he resigned in 1926.——Dr. Charles W. Moore, Eveleth, was recently the guest of honor at a testimonial dinner given by professional and business friends.——Dr. Charles H. Mayo, Rochester, Minn., received the merit award of the Northwestern University Alumni Association on "illumination night" in Evanston, Ill., preceding the commencement exercises, June 15. The award is given annually to alumni for "worthy achievement which has reflected credit upon their alma mater."

MISSISSIPPI

Personal. — Dr. Hugh L. McKinnon has been appointed superintendent of the Mississippi School and Colony for Feebleminded, Ellisville, succeeding Dr. Hubert H. Ramsay. —— Dr. Russell R. Welch, assistant superintendent of the state insane hospital at Jackson, has been named superintendent of East Mississippi Hospital, Meridian, succeeding Dr. Matthew J. L. Hoye.

County Societies Merge.—The consolidation of the Clarksdale and Six Counties Medical Society and the Delta Medical Society culminated in a meeting in Clarksdale, recently. The combined group will be known as the Delta Medical Society. Dr. Leon H. Brevard, Dundee, was named president, to take office January 1. Until that time Dr. Richard C. Smith, Drew, outgoing president of the old Delta Medical Society, will serve. Dr. Frank M. Acree Jr., Greenville, is the secretary. Representative committees of the two societies approved this merger in December, at which time the Clarksdale group

had already voted for the union. However, no further action was taken until the recent meeting of the Delta society. Three meetings a year will be held at Clarksdale, Greenville and Greenwood in rotation.

MISSOURI

Personal.—Dr. John W. Vaughan recently completed fifty years in the practice of medicine, all of which have been spent in St. Louis.——Dr. David P. Barr, St. Louis, sailed for Melbourne, Australia, June 16, where he will give a course of lectures on diseases of the endocrine glands at the University of Melbourne.——Dr. Bransford Lewis, St. Louis, was presented with a bronze plaque at the annual banquet of the American Urological Association in session at Atlantic City in recognition of his services in editing "The History of Urology."——Dr. Hugo Ehrenfest was recently promoted to professor of clinical obstetrics and gynecology at Washington University School of Medicine, St. Louis.

NEBRASKA

Society News.—The obstetric department of the University of Nebraska College of Medicine has created an Oliver Wendell Holmes trophy to be awarded annually to the councilor district showing the best record in obstetric mortality.—— Speakers at a meeting of the Sixth Councilor District Medical Society, David City, June 7, were Drs. Edwin Davis, on "Prostatic Obstruction"; Rodney W. Bliss, Omaha, "The Kidney in Prostatic Obstruction," and Warren Thompson, Omaha, "The Heart in Prostatic Hypertrophy."

NEW MEXICO

Personal.—It is reported that Dr. Frank S. Fellows of the U. S. Public Health Service, who is now medical director of the Indian Bureau in Alaska, has been transferred to the southwest with headquarters in Albuquerque, to succeed Dr. Langdon R. White, who has been transferred to the territory surrounding Minneapolis. The southwest territory includes Arizona, New Mexico and southern Colorado.

Measles Epidemic at Jemez.—Twenty children died in an epidemic of measles, which began about June 1 in the Indian pueblo of Jemez and had attacked 130 of the 147 children in the pueblo by June 28, according to newspaper reports. A temporary hospital was set up by physicians and nurses of the Indian Medical Service, but some of the parents refused to allow their children to be taken to the hospital. It was said that none of those who were properly cared for died. The population of the pueblo is about 650.

NEW YORK

State Stops Distribution of Toxin-Antitoxin.—The division of laboratories and research of the state department of health has discontinued distribution of diphtheria toxin-antitoxin and will hereafter provide only toxoid. Distribution of toxoid was begun two years ago, but toxin-antitoxin has been supplied on request. Accumulated experience is considered to have demonstrated the superiority of toxoid and requests for the older material have diminished so that its preparation is no longer warranted, the department announces. Immunity is more speedily acquired with toxoid and the percentage of persons immunized is greater and in addition it does not contain horse serum, to which many persons are hypersensitive.

Dr. Davenport Retires.—Charles B. Davenport, Ph.D., for thirty years director of the Station for Experimental Evolution of the Carnegie Institution, Cold Spring Harbor, has announced his retirement. Albert F. Blakeslee, Ph.D., assistant director, has been appointed his temporary successor. Dr. Davenport served as associate professor of zoology at the University of Chicago until his appointment to the Carnegie post in 1904. In 1910 he became director also of the Eugenics Record Office at Cold Spring Harbor. Dr. Davenport has served as president of the American Society of Zoologists, the Eugenics Research Association, the Galton Society and the International Federation of Eugenics Organizations and as vice president of the American Association for the Advancement of Science, the American Society of Naturalists and the National Institute of Social Sciences. He will continue his research privately, with headquarters at the Eugenics Record Office, according to the New York *Times*.

New York City

Scarlet Fever Isolation Period Reduced. — Uncomplicated cases of scarlet fever may now be released from isolation after twenty-one days as a result of an order recently issued by the health department. A trial of the twenty-one day isolation period was inaugurated in Brooklyn in 1932, while in other boroughs uncomplicated cases were held till the thirtieth day. Study of the results of this test showed that the number of secondary cases from the reduction was so small that this disadvantage was outweighed by the advantages of shorter isolation. Complicated cases will be subject to the same regulations as before.

Advisory Obstetric Council Appointed. — Dr. John L. Rice, commissioner of health, has appointed a council of obstetricians and gynecologists to make a complete study of the maternal and infant mortality situation in the city. The new council will study institutional obstetrics, including a survey of facilities for maternity cases, with special reference to environment, equipment and adherence to accepted hospital standards; organization and control of hospital staffs, proprietary hospitals and nursing homes; prenatal care services throughout the city; the status, control and teaching of midwives, and the value of confinement at home and its limitations and methods for instruction of the public in adequate maternity care. Dr. Rice is chairman of the council, Dr. Alfred E. Shipley vice chairman, and Dr. George W. Kosmak secretary. Members are the following physicians:

Donald E. Law	Daniel V. Catalano	John H. Telfair
Benjamin P. Watson	Joshua Ronsheim	Arthur C. Butts
George Gray Ward	Alfred C. Beck	Harry P. Mencken
Henricus J. Stander	O. Paul Humpstone	George J. J. Lawrence
Frederick C. Holden	Harvey B. Matthews	John P. C. McManus
Charles A. Gordon	Harry Aranow	

Vacancy in Health Department.—The Municipal Civil Service Commission of New York invites applications for the position of director of district health administration until 4 p. m., August 2. Application blanks will be mailed on request, provided 3 cents in postage stamps accompanies the request. Applicants who are summoned for the examination will be required to pay a fee of $6.50 before taking the first assembled test. The examination is open to all citizens of the United States more than 21 years old and the requirement that every application must bear certificates from four persons living in New York is waived for persons living outside the state, who must, however, present such certificates from persons engaged in business or resident elsewhere. Candidates will be graded on their experience, a written test on the duties of the position and an oral test. Those who receive a passing mark in experience will be summoned for the duties test, which will be held only in New York. Candidates must be graduates from approved medical schools and must possess licenses to practice medicine. They must have had at least six years of medical experience, three years of which shall have been in responsible positions concerned with public health administration. At the time of the written test each candidate must present his license, and those who live outside New York must have their licenses endorsed by the board of regents of the University of the State of New York before their names can be certified for appointment. The position includes administrative charge and executive supervision of district health center administration; direction of activities of medical inspectors and other employees; lecturing and writing concerning activities of the department; contact with department officials, the public and cooperating agencies and keeping of records of the division. The salary is $6,500 a year.

NORTH CAROLINA

Society News. — Among the speakers at the spring meeting of the Tenth District Medical Society in Marion, May 16, were Drs. Frederic M. Hanes, Durham, on "Intracranial Hemorrhages" and Fred E. Motley, Charlotte, on sinusitis.

OHIO

Appointments to Medical Board.—Dr. John H. J. Upham, Columbus, chairman, board of trustees, American Medical Association, was recently reappointed a member of the State Medical Board of Ohio for the fourth time. Dr. Louis T. Franklin, Chillicothe, was appointed to succeed Dr. John Stewart Hagen, Cincinnati.

Society News. — Speakers at a meeting of the Adams County Medical Society in Batavia, June 20, were Drs. Parke G. Smith, Cincinnati, on "Anatomy of the Prostate, Mechanism of Prostate Obstruction and Present Status of Prostatic Surgery"; Otto J. Seibert, Cincinnati, "Cancer of the Breast," and Carl Minning, Williamsburg, "Gonorrhea in the Male." ——Dr. Cecil Striker, Cincinnati, addressed the Darke County Medical Society, Greenville, May 18, on treatment of diabetes. ——Dr. Clement L. Jones, Springfield, addressed the Miami and Shelby County Medical Societies, June 7, in Sidney, on angina pectoris.——Dr. James R. Tillotson, Lima, discussed

fractures at a meeting of the Hardin County Medical Society, Kenton, May 17.——Dr. Charles L. Brown, Ann Arbor, Mich., addressed the Mahoning County Medical Society, Youngstown, June 19, on "Diagnostic Survey and Medical Management of Chronic Gallbladder Disease." —— Dr. John H. J. Upham, Columbus, addressed the Stark County Medical Society, Alliance, in May, on "Modern Aspects of Heart Disease in Middle Age." —— Dr. Harold K. Shawan, Detroit, addressed the Marion Academy of Medicine, Marion, June 5, on "Craniocerebral Injuries" and "Surgical Management of the Toxic Goiter Case."

OKLAHOMA

University News. — Dr. Rufus Quitman Goodwin was recently promoted to assistant professor of medicine at the University of Oklahoma School of Medicine, Oklahoma City; Dr. Raymond Lester Murdock to associate professor of surgery, and Dr. Herbert Dale Collins to assistant professor of surgery.

OREGON

Society News. — Speakers at the annual meeting of the Southern Oregon Medical Society in Medford, May 8, included Drs. George W. Swift, Seattle, on "Treatment of Head Injuries"; Ralph A. Fenton, Portland, "Early Diagnosis of Middle Ear and Mastoid Disease," and Albert H. Ross, Eugene, "Protein and Edema." —— Dr. George I. Hurley, Eugene, addressed the Lane County Medical Society, Eugene, May 17, on "Medical Economics and State Medicine."——Drs. Warren B. Penney, Tacoma, Wash., and Thomas M. Joyce, Portland, addressed the Central Willamette Medical Society, Eugene, May 3, on "Cardiac Arrhythmias" and "Treatment of Goiter," respectively.——Dr. Charles E. Hunt, Eugene, presented a paper before the Portland Society of Obstetricians and Gynecologists, May 23, on "Recent Trends in Obstetric Analgesia."——Dr. James E. Campbell, Sutherlin, has been appointed health officer of Douglas County, succeeding Dr. Bertram R. Shoemaker, Roseburg.

PENNSYLVANIA

Fifty Years in Practice.—Dr. Alice Rogers Easby, Media, and Dr. Florence May Sibley Lee, Haverford, received gold medals at the annual commencement of the Woman's Medical College of Pennsylvania, June 5, in celebration of fifty years of medical practice. They were members of the class of 1884.

Personal.—Dr. William L. Estes Sr., Bethlehem, received the honorary degree of doctor of science at the annual commencement of Lehigh University, June 12. Dr. Estes lectured on physiology and hygiene at Lehigh from 1883 to 1923.—— Dr. William B. Fulton, Pittsburgh, has succeeded Dr. Elizabeth B. Bricker, Lititz, as head of the industrial hygiene and sanitation section of the state department of labor and industry, Harrisburg.——Dr. Henry F. Ulrich has been appointed coroner of Snyder County to succeed the late Dr. A. Jerome Hermann, Middleburg.

VIRGINIA

Personal.—Dr. Lawrence T. Price has resigned as professor of clinical genito-urinary surgery at the Medical College of Virginia, Richmond. —— Dr. Albert Eugene Casey of the Rockefeller Institute for Medical Research, New York, has been appointed associate professor of pathology at the University of Virginia School of Medicine.

Society News.—At the quarterly meeting of the Southside Virginia Medical Association in Suffolk, June 12, speakers included Drs. Martillus H. Todd, Norfolk, on "Abdominal Emergencies"; Thomas Dewey Davis, Richmond, "Diagnosis of Chronic Appendicitis," and Philip Jacobson, Petersburg, "Surgery of the Normal Thyroid."——The Bedford County Medical Society was recently reorganized with Dr. Charles H. Bondurant, Bedford, president, and Dr. Joseph A. Rucker, Bedford, secretary. At the first meeting speakers were Drs. Samuel Beverly Cary, Roanoke, on "Transurethral Resection"; Collins D. Nofsinger, Roanoke, "Diabetes," and Eddie L. Johnson, Bedford, "History of Medicine During the Past 125 Years."——Drs. James M. Hutcheson and Wilbur R. Bracey, Richmond, among others, addressed the Mecklenburg County Medical Society, Clarksville, May 8, on "Cardiac Therapy" and "Cancer of the Lung," respectively. —— Dr. Carrington Williams, Richmond, addressed the Lynchburg Academy of Medicine, May 7, on "Lesions of the Stomach."——Dr. Wyndham B. Blanton, Richmond, among other speakers, led a discussion of medical economics at a meeting of the Post-Graduate Medical Society of Southern Virginia, Farmville, May 15.

WISCONSIN

Society News.—At the tenth annual meeting of the Seventh District Medical Society in Whitehall, May 16, speakers were Drs. Elmer L. Sevringhaus, Madison, on "Glandular Therapy"; Fred R. Thompson, Rochester, Minn., "Present-Day Management of Prostatic Obstruction"; Thomas J. O'Leary, Superior, "Surgery of the Gallbladder," and Joseph G. Mayo, Rochester, "Secondary Anemias." Mr. J. George Crownhart, executive secretary, State Medical Society of Wisconsin, also made an address on medical economics. —— Dr. Lawrence V. Littig, Madison, was elected chairman of the radiology section of the State Medical Society of Wisconsin at the annual meeting in Janesville in May.——Drs. Fremont A. Chandler, Chicago, and Joseph W. Gale, Madison, among others, addressed the Ninth Councilor District Medical Society at Stevens Point, May 10, on "Back Injuries, with Special Relation to the Lumbosacral Region" and "Surgical Treatment of Pulmonary Tuberculosis," respectively.

GENERAL

Dr. Kracke Awarded Medal.—Dr. Roy R. Kracke, associate professor of bacteriology and pathology, Emory University School of Medicine, Emory University, was awarded the Ward-Burdick Medal of the American Society of Clinical Pathologists at its meeting in Cleveland, June 7-11, for his work on agranulocytic angina. Dr. Frederick H. Lamb, Davenport, was installed as president; Dr. Foster M. Johns, New Orleans, was named president-elect; Dr. Benjamin S. Kline, Cleveland, vice president, and Dr. Alfred S. Giordano, South Bend, Ind., reelected secretary.

Another Kind of Impostor.—Dr. Fred Baker, Point Loma, Calif., recently reported that a young man using the name Walter J. Sherman had approached him asking for money to tide him over the difficulties incident to an automobile mishap. He claimed that he had just graduated from Cornell University Medical School, New York, and was on his way to take his internship in a Seattle hospital when he ran into a sheriff, who arrested him and confiscated his money for bail. He claimed to be a grandson of Mr. Walter J. Sherman, Toledo, Ohio, and wore a Delta Kappa Epsilon pin. Mr. Sherman in a report to Cornell University Medical College states that he has no Sherman grandsons and that this young man is a fraud.

Regulations on Tuberculosis Eradication.—New regulations have been approved by the secretary of agriculture to govern the emergency animal disease eradication program. The first allotment of funds, totaling $2,000,000, will be used for cattle tuberculosis work alone and will be spread over twenty-five states. The new regulations differ from those used in the regular conduct of the work principally in allowing states to participate in eradication work whether or not they expend any of their own funds for indemnities or for the cost of testing. Payments for cattle found to be tuberculous will be made on the basis of a maximum of $20 a head of federal money for grade cattle and $50 for registered pure bred cattle.

International Congress of Veterinarians.—The twelfth International Veterinary Congress will be held in New York at the Waldorf-Astoria, August 13-18, under the presidency of Prof. E. Leclainche, Paris. Among subjects listed on the program of interest to physicians are research on filtrable viruses; research on contagious abortion; eradication, immunity and protective inoculation against tuberculosis; psittacosis; pasteurization of milk, and unification of methods of meat inspection. Among speakers listed are Dr. Gaston Ramon, assistant director, Pasteur Institute, Paris; Prof. O. Bang, Copenhagen, Denmark; Dr. Charles Guérin, Paris; Prof. G. Forssell, Stockholm, Sweden; Karl F. Meyer, Ph.D., San Francisco, and John R. Mohler, chief, bureau of animal industry, U. S. Department of Agriculture. This is the first congress of its kind to be held outside of Europe. Physicians are eligible to extraordinary membership, the cost of which is $5 and which includes the complete proceedings.

Impostor in Texas. — A physician of Midland, Texas, reports that a man claiming to be a Philadelphia physician borrowed money on the strength of a hard luck story and omitted returning it. The man was traveling in a Packard car, with a woman, a little girl and a boy. He said that he had lost his billfold and that he would return the money as soon as he reached El Paso, where he was known. He gave a card on which was printed: "Hedrik Von Tromp, M.D., Phone Penn. 6780, Physician and Surgeon, 1712 Chester Ave., Philadelphia, Pa." He also wrote on the card his license number, Pennsylvania 5J931, and stated that he had practiced in Philadelphia since 1900. When the money was not returned the next day as promised, the Texas physician investigated

and found that a 1916 directory of Philadelphia did not give his name. Records of the American Medical Association do not contain such a name and the Philadelphia County Medical Society reported that the name was unknown there.

News of Epidemics.—Thirty-six cases of typhoid, with one death, were recently reported in an outbreak at the village of Auburn, Ky. Four cases in Brooklyn have been traced to the eating of raw clams dug at Canarsie Beach, in violation of health department warnings; there have been forty-five cases in New York since April 1. Clams were also suspected as the source of seven cases in Newport, Va., reported June 15. In Lebanon, N. H., four cases were traced to the use of polluted spring or well water, June 8. Sporadic cases were also reported in Toledo, Ohio, and Albuquerque, N. M. —— Two cases of Rocky Mountain spotted fever were recently identified in Mecklenburg County, N. C. The belief was expressed that the disease was transmitted by ticks on a mule lent to a family by relief agencies. One child died after an illness of four days.——The Wisconsin state board of health reported that 8,167 more cases of measles occurred in the state in May than in May 1933.

Society News.—Dr. Louis A. Buie, Rochester, Minn., was elected president of the American Proctologic Society at its recent annual meeting, and Dr. Frank G. Runyeon, Reading, Pa., reelected secretary. The next annual session will be held in Atlantic City.——Dr. Henry H. Forbes, New York, was elected president of the American Bronchoscopic Society at its annual session, June 11, and Dr. Lyman G. Richards, Boston, reelected secretary.——At the annual meeting of the American Academy of Pediatrics, June 11, Dr. Thomas B. Cooley, Detroit, was installed as president; Dr. Henry Dietrich, Los Angeles, named president-elect, and Dr. Clifford G. Grulee, Evanston, Ill., reelected secretary.——Dr. Edward W. Archibald, Montreal, was elected president of the American Surgical Association, June 4-6, and Dr. Vernon C. David, Chicago, reelected secretary. The next annual session will be held in Boston.——Dr. Sara Josephine Baker, New York, was chosen president-elect of the Medical Women's National Association at the annual meeting in Cleveland. Dr. Lena K. Sadler, Chicago, was installed as president and Dr. Alice I. Conklin, Chicago, was made secretary.

PHILIPPINE ISLANDS

Society News.—At a recent meeting of the Manila Medical Society, speakers were Drs. Candido M. Africa and Eusebio Y. Garcia, on "Parasitology of Schistomiasis Japonica"; Jose Albert and Moises B. Abad, "Leukemoid Blood Picture in Acute Infectious Diseases." Drs. Albert and Julian L. Paguyo reported a case of agranulocytosis. —— Dr. Jose O. Nolasco reported a case of cardiac aneurysm and Dr. Casimiro B. Lara presented excerpts from the annual report of the Culion Leper Colony at a recent meeting of the Culion Medical Society.

FOREIGN

Centenary of Medical School.—The University of Liverpool celebrated the hundredth anniversary of the founding of its medical school, May 11. Honorary degrees were conferred on the following, among others: Sir Thomas Lewis, Mr. Wilfred B. L. Trotter, Mrs. May Mellanby, London; Dr. Henry R. Dean, Cambridge, and Prof. William Blair-Bell. Professor Blair-Bell held the chair of obstetrics and gynecology in the university from 1921 to 1931.

British Medical Association. — The one hundred and second annual meeting of the British Medical Association will convene in Bournemouth, July 24-28, under the presidency of Dr. Thomas G. Moorhead, regius professor of physic, Trinity College, Dublin. The annual representative meeting will begin at the Grand Hall, Town Hall, July 20, to continue on the following three week days. Prof. Vernon H. Mottram will give the popular lecture at the Grand Hall, Municipal College, July 27, on "Foods, Fads and Fashions." A feature of the meeting will be an exhibition of pictorial art of the medical profession at the Russell-Cotes Art Gallery. Dr. S. Watson Smith, London, will be installed as president at this meeting.

Society News.—The International Society of Geographic Pathology will hold a congress in Utrecht, July 26-28; subjects for discussion are cirrhosis of the liver, arteriosclerosis and organization of the society, which was founded in 1927. ——The fourth session of the International Office of Documentation for Military Medicine was held in Liége, June 28-30. Medical aspects of aviation, organization of the sanitary service at the base, international registration of wounds and diseases, immunization against infection of wounds, bacteriologic warfare, processes of disintoxication, disimpregnation of the linen and clothing of the gassed and interchange of sanitary formations during a campaign were among the subjects discussed.

University News. — The University of Birmingham will open a department of industrial hygiene and medicine in October to undertake research in the application of medicine to industry and to offer special training to physicians now connected with industry or wishing to apply for such positions. ——A gift of £15,000 has been made by Mr. S. A. Courtauld to the Middlesex Hospital to found a clinical research unit, to be under the direction of the council of Middlesex Hospital Medical School and for the intensive and exclusive investigation of such diseases as may be selected from time to time. The *British Medical Journal* reports that "it is without precedent in this country for a medical school to be given direct access to, and a large measure of control over, beds in the associated hospital."

Cancer Research at Hebrew University. — A fund of about $200,000 has been created by anonymous donors to establish and maintain a department at the Hebrew University, Jerusalem, for cancer research. Study will be directed first toward radiobiology, physiologic chemistry and the study of cells and tissues. At a recent meeting of the American members of the board of governors of the institution in New York, it was voted to nominate Dr. Ludwig Halberstaedter, formerly of the staff of the Cancer Institute of Berlin, now with the Rothschild Hadassah Hospital in Jerusalem, as head of the department of radiobiology; Dr. Georg Goldhaber, formerly Dr. Halberstaedter's assistant, as his assistant in the new department; Dr. H. A. Krebs, formerly of Berlin and now at Cambridge University, England, as head of the department of physiologic chemistry, and Dr. Leonid Doljansky, formerly of the Institute of Pathology, University of Berlin, and now at the University of Copenhagen, as head of the new department to be devoted to tissue culture research and morbid anatomy.

Deaths in Other Countries

Dr. Carlos Heuser, Buenos Aires; author of many articles on radiography and gynecology; collaborator of *La semana médica;* died, March 28. Dr. Heuser was the guest of the Radiological Society of North America at its 1931 meeting in St. Louis and received the society's gold medal in recognition of his work in methods of making roentgenograms for the study of pregnancy (THE JOURNAL, Dec. 19, 1931).

Government Services

Wellcome Medal and Prize

Competition for the Henry S. Wellcome Medal and Prize, consisting of a gold medal and a cash prize of $500, is open for the best paper on "The Civilian Doctor's Part in a National Military Emergency." Competition is open to all medical department officers, former officers, acting assistant and contract surgeons of the army, navy, public health service, organized militia, veterans' administration, U. S. Volunteers and the reserves of the United States, commissioned medical officers of foreign military services, and all members of the Association of Military Surgeons of the United States. Five copies of the competitive paper must be furnished, identified by a nom de plume. They must be forwarded to the secretary of the association of military surgeons not later than August 15 accompanied by a sealed envelop marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title and address. The length of the essays is fixed between a maximum of 10,000 words and a minimum of 3,000 words. Further information may be had from the secretary of the association, Army Medical Museum, Washington, D. C.

Change in Typhoid-Paratyphoid Vaccine

As the result of investigations into the quality and protective value of the army typhoid prophylactic over a period of many years, it has been decided to discard the paratyphoid A fraction and to increase the content of typhoid bacilli to 2,000 million per cubic centimeter; the dosage (0.5, 1 and 1 cc.). The method of administration will remain as at present. The new vaccine will be placed in use at all army installations on August 1, when the old vaccine is either to be discarded or returned to the Army Medical School. In 1928 the paratyphoid B fraction was discarded as being no longer required.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 23, 1934.

The National Health

In the house of commons, Sir E. Hilton Young, minister of health, introduced a vote of $9,800,000 for the salaries and expenses of the ministry. He pointed out that between 1919 and 1934 the vote had increased as a whole by the enormous figure of $290,000,000, rising from $65,000,000 to $355,000,000. Half of that increase, however, had been caused by the derating bill, which transferred cost from local to national taxation. Of this expenditure of $355,000,000, $200,000,000 was the block grant to local authorities, $57,000,000 was the state expenditure on pensions and $70,000,000 on housing. The whole expenditure depended entirely on the policy laid down by the house of commons and was not susceptible of increase or decrease by any administrative action, except over a small margin.

He next dealt with the standard of the national physique and health, as shown by the incidence of disease in the country and the resistance to it. On this matter it was possible to give a more positive opinion than with regard to malnutrition, because the results were reflected much more in actual figures. The most conclusive was the general death rate, which was sensitive to epidemics. It took a sharp rise in the influenza year of 1929. The general death rate showed a downward tendency, which was the best proof of the general maintenance of national health and physique. Today the death rate was 10 per cent lower than five years ago, in spite of the fact that the population, owing to the fall in the birth rate, was getting older in its average age.

THE INFANT DEATH RATE

During the last ten years the improvement in the infant death rate was such that every year 40,000 more infants under the age of 1 year are saved than were at the beginning of the century. This was due to education of mothers in the care of infants. He paid a tribute to the magnificent work done at the 1,300 antenatal clinics and 2,800 infant welfare centers; also to the thousands of health visitors and nurses who worked in the houses of the people. In the last fifteen years the death rate of children under 5 years of age had been brought down by one half in the three diseases most fatal to them—bronchitis, diarrhea and measles. Where one person in 1932 died from whooping cough, diphtheria, scarlet fever and typhoid, the figures at the beginning of the century were respectively four, four, seven and twenty-two. Brilliant successes had been made in this field, where the positive carrier could be studied—in water, milk, some insect or food. The difficulty was where infection was carried from person to person. Overcrowding was the principal cause of this and clamored for a national remedy. Compared with ten years ago the death rate from tuberculosis had declined 22 per cent.

STERILIZATION OF THE MENTALLY DEFICIENT

The reports as to lunacy and mental deficiency were less favorable. He had been impressed by the report of the committee recommending voluntary sterilization of the mentally unfit. But it was a novel question and one not yet thought out by the mind and heart of the nation. It would be wrong to press a national policy without making sure that it would give no offense to the national conscience.

THE MATERNITY DEATH RATE

Though there had been a decrease in the maternity death rate, the position was not as favorable as it should be. They must press for a better development of maternity services. During the year, 147 more clinics had been opened.

SLUM CLEARANCE

There had been tremendous activity in the slum clearance campaign. During 1933-1934 some 2,250 slum areas had been declared, covering 37,000 houses and 172,000 people. There had been a boom in the building of small houses, which were being constructed at the rate of 300,000 a year, and of these 155,000 were for lower paid wage earners. But rents were still not low enough and were excessive in comparison with the cost of other necessaries.

Tax on Carbon Arc Lamps Used in Hospitals

In the house of commons an amendment was moved to reduce the duty on carbon arc lamps of more than 14 mm. in diameter from $1.25 to 36 cents, because such lamps are used in therapeutics. A member stated that the consulting engineer of St. Bartholomew's Hospital told him that after long and laborious experiments he found that the imported article was the only carbon that could be relied on to give perfect treatment without risk to the patient and to the satisfaction of the physician. Replying for the government, Dr. Burgin, secretary of the board of trade, made a point of the fact that the hospitals had not made representations to him on the tax; but he was reminded that the reason for this was that they were reluctant to mix in a political matter and that the duty would raise the cost of light therapy. Dr. Burgin said that the duty was granted under conditions by which the consumer was protected, ignoring, as usual, with taxes of imports, the fact that the free entry of the foreign article was the best possible protection for the consumer, and therefore objectionable to the manufacturers here.

Memorial to Sir Walter Fletcher

A committee including Mr. Stanley Baldwin, the presidents of the Royal Society and the Royal Colleges of Physicians and Surgeons has appealed in the *Times* for subscriptions to establish a laboratory as a memorial to Sir Walter Morley Fletcher, the first secretary of the Medical Research Council, who died a year ago when in the height of his powers. A brilliant investigator and influential teacher at Cambridge, he became known over the world as a great organizer of research. It is proposed to place a portrait bust in the entrance hall of the National Institute for Medical Research and to build a Walter Fletcher Laboratory to be devoted particularly to those nutritional studies in which he was keenly interested.

Quarantine Farms for Tuberculous Cattle

A correspondent of the *Times*, Mr. B. H. G. Arkwright, brings forward a novel method of dealing with tuberculous cattle in dairy herds. He points out that the chief difficulties in any system of eradication lies in the insanitary buildings and segregation possibilities. These difficulties could be overcome by having quarantine farms for animals reacting to the tuberculin test. All animals yielding tuberculous milk should be destroyed and no milk cow that reacted to the contagious abortion test should be admitted to the quarantine farm. The advantages of the scheme are as follows: 1. The cows admitted need not be at once destroyed, because their milk would be fit for consumption after pasteurization; for if 40 per cent of dairy stock, as estimated, would react to the tuberculin test, and if, as also estimated, only 0.5 per cent of dairy stock yield tuberculous milk, the bulk milk from the quarantine farm would be a purer supply than that from a farm in which a milk from reactors, nonreactors and undetected yielders of tuberculous milk is bulked (for all the yielders of tuberculous milk have been eliminated). 2. The difficulties of segregation of reactors from nonreactors have been abolished. 3. The

reconditioning of buildings might (after drastic disinfection subsequent to removal of the reactors to the quarantine farm) be done in a more economical manner. 4. The calves of high yielding reacting cows born in the quarantine farm could be saved to their owners on condition of removal at birth from their dams to uninfected surroundings, since almost no calves are born tuberculous. 5. The present temptation to pass deep-milking reacting cows round the markets, so disseminating infection, would lose its economic urge, since the owner would not be deprived of the profit from a cow that he wishes to discard but cannot afford to sacrifice.

The Payment of Physicians for Road Accidents

In view of the enormous amount of service rendered by physicians in the treatment of road accidents for which no payment is received, members of the house of commons who are specially interested decided that the following new clauses be proposed for the road traffic bill now before parliament: 1. Where medical or surgical treatment or examination is immediately required for bodily injury (including fatal injury) caused by a road accident, the owner of the vehicle shall pay to the physician (*a*) a fee of $3 in respect of each person injured and (*b*) a sum in respect of any distance in excess of two miles of the journey from and back to the place from which the physician is summoned of 12 cents for every complete mile or part of a mile of that distance. 2. Where emergency treatment is carried out in a hospital, the foregoing fee shall be paid to it.

The Training of Midwives

The sixth congress of the International Midwives' Union was held in London, when over 300 delegates from fifteen countries were present. The first subject of discussion was "The Training and Education of Midwives." Miss E. M. Pye, president of the congress and president of the Midwives' Institute, said in her presidential address that it was agreed that a midwife must be highly trained and skilled, but there were amazing differences of opinion as to what that training should be. The length of time considered necessary varied in different countries between six months and three and one-half years. The United States, where maternal mortality was high, had ignored almost entirely the midwife problem and was only now beginning to realize that it demanded urgent attention. The habit in England (where there were about 56,000 midwives on the roll but only about 14,000 practicing) for most trained nurses to take their midwifery diploma without any intention to practice midwifery led to great waste of teaching material. On the question of the limitation of the number of pupils accepted for training, the principal factors affecting it were the falling birth rate, the increasing number of women who went into institutions for childbirth, and in some countries the competition of the medical profession. In Great Britain there was a strong and increasing demand for sedatives and analgesics to deaden pain, and also a demand, both from the midwives and from the public, that midwives should be allowed to use all the alleviations that were safe in their hands and taught their use. In the subsequent discussion Mrs. Mitchell, deputy chairman of the Midwives' Institute, said that it was essential that something should be done to improve the financial position of midwives and that there should be some limitation to the number trained. Mme. Roger stated that in France the number of midwives did not exceed 10,500 but that there was a surplus. It was absolutely necessary to stem the ever increasing flow of candidates. French midwives were unanimously opposed to the principle of supervision or control, which they considered would undermine their prestige. Mme. Rembaut described a similar overcrowding of the profession in Belgium.

PARIS

(From Our Regular Correspondent)

May 30, 1934.

New Diseases in the Paris Region

In Professor Nicolle's book, analyzed in a recent letter, it was predicted that, while certain infectious diseases will gradually disappear under the efforts of preventive hygiene and therapeutics, others will appear in areas in which they were unknown, owing to the greater facilities for their dissemination and the rapidity with which, because of the newer means of transportation, their causative agents are propagated. It is quite likely that some day yellow fever will be carried from Senegal to northern Africa and possibly to the European countries on the Mediterranean, as a result of the transportation of certain species of Stegomyia by commercial airplanes. In the environs of Paris, a case of mouse typhus and a case of autochthonous malaria have occurred in a restricted area in which these two diseases have been previously unknown. The case of mouse typhus was naturally wrongly diagnosed at first by the physicians who observed it, as they had never encountered a case before. The patient was a young woman in whom an intense fever was observed over a period of eight days, with generalized macular erythema, a meningeal syndrome and spinal leukocytosis. Serodiagnosis ruled out the paratyphoids. The correct diagnosis was not made until a month after recovery, by a positive Weil-Felix reaction of 1:500, which became negative a month later. The patient lived near a farm infested with rats. Professor Brumpt discovered, a short time ago, in the brain of rats captured in Paris and the environs, the presence of typhus virus. This fact causes anxiety, for it awakens the fear that the disease, heretofore unknown in Paris, may make its appearance.

R. Marin, Chassigneux and Rouesse, in a communication presented by Mr. Marchoux to the Academy of Sciences, have reported a case of autochthonous malaria in a woman living in the vicinity of the Asile de Maison Blanche, where there are hospitalized a number of patients with dementia paralytica to whom malaria therapy has been previously applied. The transmission of inoculation malaria being experimentally possible, the reported observation appears to reveal the danger associated with the placement in rural hostels of dementia paralytica patients who have been inoculated with malaria, since the common culex is capable of transporting occasionally the hematozoon from an infected to a healthy subject if his bite is sufficiently deep and reaches the blood capillaries. A number of such cases were observed during the war in the vicinity of camps of colonial troops. But that never resulted in the creation of indigenous foci of autochthonous malaria.

Studies on a Pathogenic Principle of Neoplasms

In a communication presented to the Academy of Sciences by Besredka and Gross, these authors reported the results of research at the Institut Pasteur de Paris on the pathogenic principle contained in neoplasms produced by inoculation in the mouse. The tumor involved was the Ehrlich sarcoma, the virulence of which was considerably increased by serial reimplantation. This principle, not yet isolated, is found not only in the neoplastic tissues but also in the blood and the other organs of the infected mouse. It is not known whether a filtrable virus is involved, and it does not appear to be cultivable; but it is affected by physical agents and may be destroyed by heat (between 40 and 43 C., depending on the duration of the exposure). The principle is extracted from fresh tumors finely ground and emulsified, the emulsion being afterward clarified by repeated centrifugations. The fluid inoculated in infinitesimal doses in mice causes the constant appearance of the same type of sarcoma. The inoculation may be negative

if the animal has already received a previous positive inoculation. An excision of the tumor, although complete, is usually followed by a rapid recurrence at the same site or a generalization by metastasis. Inoculation of the residues of centrifugation, composed of ground cells changed beyond recognition, is negative. The idea of a graft can therefore be discarded. Consequently, Besredka advances the hypothesis that the more or less malignant tumor is a defense reaction of the organism toward a virus that is widespread in nature, as is the staphylococcus, for example, but much more delicate than the staphylococcus. It can be easily destroyed by physical or mechanical agents and cannot develop spontaneously other than in tissues whose natural immunity has been diminished. The sensitiveness of this virus to heat may serve to explain the rarity of sarcomas in tropical countries and likewise spontaneous recoveries sometimes observed during the progress of erysipelas, while it justifies also trials of treatment with induced hypothermia and pyretotherapy.

BERLIN

(From Our Regular Correspondent)

May 28, 1934.

A Discussion of the Vitamins and the Weather

The meeting of the Gesellschaft für Verdauungs- und Stoffwechselkrankheiten, was held this year, jointly with the Gesellschaft für innere Medizin in Wiesbaden. Stepp of Breslau presented a paper on the vitamin theory giving a survery of the changes in the conceptions during recent years. Injuries due to lack of vitamins may, under certain conditions, he said, come to light only after many years or even in the next generation.

Rominger of Kiel spoke on the significance of vitamin D for metabolism and nutrition. He brought out that it was not yet proved whether the antirachitic active principle of cod liver oil is identical with viosterol. Through the irradiation of ergosterol, toxic by-products arise, which in nonrachitic animals lead to hypercalcemia, dystrophia and sclerosis of the arteries and of most internal organs. In the absence of proper indications, the administration of vitamin D to a nonrachitic organism is not without its dangers. That rickets is a disease due to the absence of vitamins is doubtful since cod liver oil heated to 120 C. can cure rickets. Under the present conditions of nutrition in Germany only a small quantity of vitamin D is ingested, for which reason rickets is in central Europe the most frequent avitaminosis. Hypophosphatemia is a characteristic symptom. Before the appearance of a negative calcium balance a negative phosphorus balance is present. The rachitic disturbance of metabolism arises when a certain calcium-phosphoric acid compound needed for bone building, and for the formation of which vitamin D is required, is absent. The ideal prophylaxis would be the distribution to the population of milk with a constant vitamin D content.

Further communications dealt with the mechanism of vitamin action. Külman of Breslau brought out that the vitamins are not markedly specific for certain diseases. The avitaminoses are due, in the last analysis, to a disturbance of the normal correlation of diet factors.

Szent Györgyi Szeged told how he attained the isolation of vitamin C. The first source of the vitamin was Hungarian paprika. Later he established the identity of vitamin C with ascorbic acid. Its synthetic preparation has been accomplished. The daily dose for infants is 20 mg.; a hypervitaminosis in infants need not be feared.

Abderhalden of Halle presented a paper on the physiology of nutrition. Attention was called to experiments on the protein minimum. With the ingestion of a small quantity of protein (25 Gm.) complete bodily and mental performance was maintained over a period of four years. In the event of intercurrent diseases, the quantity of protein must be temporarily increased. From 60 to 80 Gm. of protein daily is, on the average, sufficient. An exclusive bread diet is not adequate. The old view of the passage of fatty acids through the intestine in the form of soaps must be discarded, since the reaction of the small intestine is not sufficiently alkaline to effect saponification. Abderhalden holds that the human organism is able to form purine derivatives from other substances besides purine bodies. It is highly probable that also uric acid can be decomposed in the human organism. In human nutrition the diet must not only be adequate and complete but must also offer variety. It is an error to assume that the farmer is always nourished in the best manner, for frequently his diet is lacking in variety.

Grafe of Würzburg presented material on the progress in the pathology of nutrition. The problem of obesity is still unsolved, but the condition is probably due to a disturbance of balance. The reasons for the varying forms of distribution of the fat ontake are unknown. Water metabolism must be particularly considered in connection with the problem of obesity. In the condition of undue leanness, there are usually disorders of appetite.

Von Tyszka, statistician of Hamburg, spoke on "Economics in Relation to Nutrition." As against the prewar period, the degree to which Germany is self sufficient from the standpoint of food supply has greatly increased.

DISEASE IN RELATION TO WEATHER

The weather, as W. Hilgers of Magdeburg brought out, is not limited to meteorological happenings—to measurable, visible and tangible meteorological elements. The troposphere surrounding the whole earth is a covering of air, which in its rotations acts on man. This influence is exerted through the so-called bodies of air, whose contacts with one another are termed "fronts." By studying the meteorological elements, the barometric changes and the nature and velocity of the winds, the approach of these bodies of air can often be foretold. They appear to be highly charged with electricity, which influences the nature of the air that opposes their advance, the effects of which extend for hundreds of kilometers. De Rudder assumes that these electrical charges, by way of the vegetative nervous system, are capable of producing disorders, which may induce complications of infectious diseases and may influence the growth of the causative agents in the body and thus contribute to the dissemination of infectious diseases. There is no evidence of a causal influence exerted by the weather on infectious agents. The course of infectious diseases, however, is probably greatly influenced by changes of weather. Many infections have a tendency to be so-called seasonal disorders, as, for example, intestinal disorders and infantile paralysis in the fall, and catarrhal disorders, pneumonia and tuberculosis in the spring. These outbreaks at different seasons may not be ascribed to changes in the weather, without further investigation.

Tasks Assigned to Certain Universities

In accordance with an order of the new minister of public instruction, the University of Breslau, in collaboration with the universities of Göttingen, Kiel and Königsberg, has been assigned certain special scientific and political tasks. On these universities devolves the task of presenting a perfect realization of the idea of a national-socialist institution of higher learning for German youth. It is emphasized that, in the new Germany, university study constitutes a high privilege, and that particularly at the University of Breslau the student will be faced with great problems of a political and scientific nature, which he must do his utmost to master, in order that he may serve properly the Germany of the future.

VIENNA

(From Our Regular Correspondent)

May 18, 1934.

Cancer of the Bronchus

In connection with the regular postgraduate courses at the Faculty of Medicine in Vienna, Prof. Dr. Kohler recently held a seminar on the diagnosis of cases of bronchial cancer in which metastases have developed. The diagnosis of the site and type of primary tumor is important. Certain tumors, such as sarcomas, which show a marked clinical resemblance to the metastasizing bronchial cancer, are easily influenced by roentgen treatment, whereas cancer of the bronchus does not yield readily to such treatment. Tumors of other organs frequently lead to metastases in the lungs; for example, cancer of the breast, prostate, thyroid and stomach, and hypernephromas. Mediastinal stasis may develop in bronchial cancer, and it is often associated with compression of the superior vena cava. One observes also edema of the face and the upper extremities; likewise a dilatation of the veins of the thorax and the back. Differentiation of a primary tumor of the mediastinum from malignant goiter is often difficult. An exact history will aid. If, for some weeks or months before the appearance of mediastinal stasis, cough, expectoration and dyspnea were present, that points to cancer of the bronchus. The roentgenologic picture and the examination of the sputum may support this diagnosis. Repeated mild attacks of hemoptysis point to a primary focus in the lung or bronchus; likewise elastic fibers, leucine and tyrosine in the sputum.

Multiple tumor areas in both lungs point away from a primary tumor in the respiratory organs. "Miliary carcinosis" of the lung is always secondary. This condition has often been observed in connection with cancer of the stomach, in which the symptoms such as appear in miliary pulmonary tuberculosis (but without fever) appeared and the diazo reaction remained negative.

Sometimes a primary tumor of one lung leads to metastases in the other lung. The different appearance of the roentgenograms of the primary tumors, as compared with the secondary tumors, aids in the diagnosis.

Metastases of the liver occur in many cases of cancer of the bronchus. The primary tumor is usually small and difficult to discover. These liver metastases often grow rapidly and always involve the whole liver, whereas cancer of the gallbladder causes metastases only in the right lobe of the liver. In cancer of the stomach and intestine there are also frequently diffuse liver metastases.

The rare primary liver carcinoma is always associated with a tumor of the spleen and early and severe icterus, which is long absent in secondary tumors of the liver. When there are multiple metastases to the bones, one must suspect not only cancer of the bronchus but also cancer of the prostate and multiple myeloma. Metastases of the bronchial cancer in the brain and spinal cord constitute a special chapter. These are often the chief symptoms of the disease, and the lung manifestations may be secondary, so that the examiner is inclined to suspect primary disorders of the central nervous system. Nevertheless, a precise examination of the lungs will usually furnish a suggestion, particularly if the possibility of the primary bronchial tumor is kept in mind. The prognosis of all these cases is unfavorable, but not infrequently they take a surprisingly slow course.

Tuberculosis of the Mediastinal Glands

From observations made at an old people's home in Vienna (6,000 beds) during the past ten years, Dr. Arnstein recently lectured before the Vienna Medical Society on "Tuberculosis of the Mediastinal Glands in Aged Persons." In contradistinction to this disease in children, which takes the form of swelling of the lymph nodes, there developed in aged persons a shrinkage and softening of the tissues, inflammations and infections in the region of the bronchi, the esophagus, the blood vessels and the nerves. One observes traction diverticula of the esophagus, bronchitis deformans, paralysis of the recurrent nerve (usually of the left side) and also atypical infiltration processes in the lung, hemoptysis, often quickly fatal, arises from erosion of blood vessels in the bronchi or esophagus, with softening of the lymph nodes. Cases that have come to necropsy show a predominance of the female sex. Anthracosis of the lung, which is observed rather frequently in Vienna, is often associated with tuberculosis of the lymph nodes and may involve other organs; but, as Professor Sternberg emphasized during the general discussion, it should be borne in mind that the mere filling of the lymph nodes with coal dust (without tuberculosis) is sufficient to produce necroses. The invasion of the lung by the contents of a tuberculous node that has been quiescent for years may produce in an aged person severe inflammatory processes. The course of such processes is atypical, and the roentgenograms are deceiving. The course of events points to almost any other condition than to perforation of the mediastinal gland. In the discussion, all speakers agreed that the perforation in the child takes place differently than in aged persons. Dr. Arnstein found in aged persons an average of 0.001 Gm. as the titer for the intracutaneous test. It is evident that pure coal dust alone is rather harmless if it is not inspired in exceedingly large quantities. The danger is not great unless it is combined with tuberculous material in persons of advanced age.

Coutard's Method of Treatment of Cancer of Larynx

In spite of excellent results that modern surgical methods have secured, treatment of cancer of the pharnyx and the larynx with roentgen rays and radium has gained favor. The type of high dosage of roentgen rays recommended by Coutard has been tried out in Vienna by Professor Hajek in a series of cases. The results of these observations were reported at a recent session of the Vienna Laryngologic Society by Dozent Dr. Wessely. In the past two years, 100 cases of operable and inoperable cancer have been treated by the Coutard method of irradiation. In a period of from four to six weeks a total of from 4,000 to 7,000 roentgens was administered in fractioned doses, at as evenly divided intervals as possible, according to the degree of the reaction. The intensity of the reaction is measured by the appearance of a fibrinous inflammation of the mucosa. This fibrinous reaction on the mucosa is regarded by Coutard as an absolute proof of correct dosage, whereas other investigators regard it as the limit of toleration. The retrogression of the tumor begins in the second half of the series of irradiations and continues for some time after their completion. Many tumors disappeared so completely that the larynx regained its normal configuration. Occasionally remnants are left that may constitute "tumor-containing" tissues or that may be "tumor free." In a few cases, however, one observes rapid growth of the tumor beginning a considerable time after the irradiation was completed. The regeneration of the glands is usually less complete. The fibrinous coating on the mucosa, which is regarded by Coutard as the test of adequate dosage, is difficult to eliminate. Yet one gets the impression that the epithelium under the coating is well preserved. Resistance and duration of the fibrinous exudation on the mucosa vary with the individual. During the irradiation, and sometimes for several months afterward, edema of the larynx may develop that will necessitate tracheotomy. Also necroses of the cartilages occur, with aspiration pneumonia, which has a bad prognosis. Operative interventions during the stage of the mucosal reaction, and for some time afterward, are dangerous because of the increased danger of infection and the weak resistance of the tissues. Diffuse tuberculosis, senility and cachexia

are contraindications to irradiation. Irradiation should not be continued if a "field" has been given the maximal dosage without effect, if true cachexia appears, if there is fever or if the mucosal reaction appears early and in an aggravated form. An operation after the irradiation is impossible, although the reverse is favorable, but recurrences after operation appear to react less promptly to irradiation. As the Coutard method has been in use but a short time, it is impossible to pronounce a final judgment on its permanent value. In any event it is excellent for inoperable cases, in which it gives at least temporary aid, and for patients who have an abnormal fear of operation, and in cases in which permanent mutilation is dreaded, for such multilation is inevitable following a radical operation on cancer of the larynx. Operable cases, however, should be treated by operation, because modern operations show no higher mortality than irradiation, while the permanent results are possibly better.

Deaths

Prof. Dr. O. Weltmann, who was suffering from rheumatism and neuritis, yesterday took his own life. The decedent was only 48 years old. He was a prominent internist, whose addresses before the Gesellschaft der Aerzte always awakened great enthusiasm. His chief interest was in serology.

A second severe loss was the unexpected death of Hofrat Dr. Simon Krüger, medical director of the Stattliche Schwefelbäder (sulphur baths under state supervision) in Baden, near Vienna. As general secretary of the German Balneological Society he had performed meritorious work in this field.

JAPAN

(From Our Regular Correspondent)

May 28, 1934.

The International Red Cross Congress

The fifteenth International Red Cross Congress, which will be held in Tokyo, October 17-29, will be the first to be opened in the Orient. More than 100 representatives have already stated their intention to attend, including John Barton Payne from the United States. More than 300 members are expected to be present, including delegates from sixty-three nations, which are the member countries of the International Red Cross Society, delegates from fifty-eight Red Cross societies of the world, and representatives of twenty-eight international organs. The program is as follows:

Wednesday, October 17, meeting of the executive committee.

Thursday, October 18, assembly of the council of governors of the societies.

Friday, October 19, assembly of the governors of the societies in the morning, and assembly by the council of delegates in the afternoon.

Saturday, October 20, inaugural meeting.

Sunday, October 21, excursions.

Monday, October 22, plenary session in the morning, and meeting of the committees in the afternoon.

Tuesday and Wednesday, October 23 and 24, various committee meetings.

Thursday, October 25, assembly of the councils of governors of the societies.

Friday, October 26, plenary session of the conference.

Saturday and Sunday, October 27 and 28, excursions.

Monday, October 29, closing meeting.

The business agenda on the program of those meetings is as follows:

1. The duties of the Red Cross and other international organizations in international relief work.
2. The progress of ratification of the Geneva convention of 1929.
3. The bill of agreement for the fate of noncombatants or civilians in the enemy's territory or in land to be occupied.
4. Application of the Geneva convention and the prisoner code in a resort to arms without declaration of war.
5. Standardization of medical supplies.
6. Protection of civilians in time of war.
7. The duty of the Red Cross in the rapprochement of all nations.
8. The equipments of the Red Cross.

These are some of the important items to be discussed in the meetings.

Women in Medicine

Of more than 3,000 women doctors in Japan, only seven have received the highest title of "Igaku-Hakushi"; that is, "Doctor of Medicine." Recently Prof. Kuni Toda of the Tokyo Women's Medical College received this title from the education office. Owing to various unavoidable difficulties, women have found it hard to continue their studies long enough to be honored with this title, which is given on presentation of a thesis. The present condition of the women doctors is rather disappointing, for they fall short of expectation. As for the men, there are 6,591 who have that high title among over 48,000 doctors. The Tokyo Women's Medical Society, which was organized in 1932, now has more than 1,200 members.

Abolition of Licensed Prostitution

After a fifty year campaign, licensed prostitution in Tokyo will before long be abolished. The brothels will be changed into restaurants or hotels or inns, and the prostitutes will become waitresses or barmaids. The system of unlicensed prostitution will, in truth, be approved. The notorious red light districts called "yoshiwara" in Tokyo, which for 400 years have been the center of public amusement, will be abolished. The prevention of venereal diseases is now under investigation by the police authorities. Out of fifty-seven prefectures, ten have already abolished licensed prostitution and six have ordered the prostitutes to change their occupations. According to reports from these prefectures, venereal disease seems to decrease year after year. If this decrease is really proved in Tokyo to be a fact, licensed prostitution will disappear all over the country in the course of time.

Medicinal Springs

About thirty years ago the medical department of Kyushu Imperial University established for the first time an institute at Beppu, the most noted watering place in Japan. Later, both the army and the navy established a sanatorium at the same town, chiefly for wounded soldiers. Various communities did likewise, but scientific research on the hot spring treatment has not yet definitely been done. Recently the Japan Medicinal Spring Society was organized with Dr. Haruo Hyashi, ex-dean of the medical department of the Tokyo Imperial University, president. The society will issue a monthly magazine and will hold a general meeting once a year.

In the Kagoshima prefecture, where hot springs abound, a medicinal spring research institute has been established under supervision of the local office.

The Academy Prize

The Academy Prize, which is the highest prize for scientific studies, for 1933 was given to Dr. Hiroshi Kon of the pathologic section of the medical department of the Hokkaido Imperial University for his studies on the silver reaction of protoplasm.

Physical Examinations of Conscripts

The war office has made public the results of a seven years statistical investigation of the health of conscripts. In 1927 there were 597,000 conscripts and in 1933 there were 565,000. The level of their health has shown a gradual fall of late, especially in those from the cities.

Marriages

JOHN DENISON SPRING, Nashua, N. H., to Miss Ethel Almira Benham of Clifton, N. J., in New York, June 9.

HERBERT W. WORTHMAN to Miss Margaret McShane, both of Louisville, Neb., June 4.

FRANCIS M. TUSHLA to Miss Ruth J. Shelley, both of Auburn, Neb., June 4.

ELMER C. MCALEER to Miss Virginia B. Milstead, both of Peru, Neb., recently.

ARTHUR JAY PHILIP to Miss Ruth Ortman, both of Brooklyn, June 24.

Deaths

Otto Henry Schultze, Huntington, N. Y.; College of Physicians and Surgeons in the City of New York, medical department of Columbia College, 1889; member of the Medical Society of the State of New York; formerly professor of medical jurisprudence, Cornell University Medical College, New York; coroner's physician for New York County, 1896-1897, borough of Manhattan, 1902-1915; medical assistant to the district attorney of New York County for many years; aged 67; died, July 4.

Olga A. Hoffman, North Madison, Ind.; Indiana University School of Medicine, Indianapolis, 1931; member of the Indiana State Medical Association; on the staff of the Madison State Hospital; aged 33; died, June 15, in the Methodist Episcopal Hospital, Indianapolis, of meningitis, following a mastoid operation.

James Lester Junk ✦ Connellsville, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1907; past president of the Fayette County Medical Society; served during the World War; aged 54; on the staff of the Connellsville State Hospital, where he died, May 20, of ruptured abdominal aortic aneurysm.

John E. Safford ✦ Stamford, N. Y.; College of Physicians and Surgeons, Baltimore, 1895; formerly secretary of the Delaware County Medical Society; at one time medical superintendent of the Stamford Hospital; aged 72; died, May 12, in the Parshall Private Hospital, Oneonta, of heart disease.

George W. Gregg ✦ Canandaigua, N. Y.; Eclectic Medical Institute, Cincinnati, 1906; since 1931 city health officer; aged 58; medical director and superintendent of the Canandaigua Health Home, where he was instantly killed, June 2, when he was crushed between the elevator cage and the door.

Llewellyn Roberts Johnson ✦ Los Gatos, Calif.; Cooper Medical College, San Francisco, 1903; served during the World War; formerly superintendent of the Hewlett Emergency Hospital, Stockton; aged 52; died, May 25, in St. Luke's Hospital, San Francisco, of pulmonary tuberculosis.

Sheridan Alfred Lockwood, San Diego, Calif.; American Medical Missionary College, Chicago, 1900; member of the California Medical Association; aged 59; for many years on the staff of the Paradise Valley Sanitarium, National City, where he died, May 29, of pneumonia.

Joseph Edward Gandy, Spokane, Wash.; University of Michigan Medical School, Ann Arbor, 1873; Civil War veteran; formerly member of the state legislature and member and president of the city council; aged 86; died, June 2, of acute dilatation of the heart.

Herbert William Casey, Brooklyn; Long Island College Hospital, Brooklyn, 1899; member of the Medical Society of the State of New York; on the staffs of St. Catherine's and St. Mary's hospitals; aged 66; died, June 21, of subacute bacterial endocarditis.

Edgar Allen Hawk, New Palestine, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1905; member of the Indiana State Medical Association; president of the Hancock County Medical Society; aged 55; died, June 12, of gastric carcinoma.

James Leonidus Fields, Jackson, Tenn. (licensed in Tennessee in 1911); member of the Tennessee State Medical Association; aged 46; died, May 26, in the United States Penitentiary Hospital, Leavenworth, Kan., of carcinoma of the cecum.

William Andrew Nield ✦ New Bedford, Mass.; Baltimore Medical College, 1902; formerly on the staffs of the Sassaquin Sanatorium and St. Luke's Hospital; aged 59; died suddenly, June 12, in the Baker Memorial Hospital, Boston, of thrombosis.

Harry Everett Nelson, New Orleans; Medical Department of the Tulane University of Louisiana, 1912; member of the Louisiana State Medical Society; on the staff of the Hotel Dieu Hospital; aged 48; died, May 16, of sarcoma.

James H. Ingram, Peiping, China; University of Pennsylvania School of Medicine, Philadelphia, 1883; member of the Medical Society of New Jersey; for many years a medical missionary; aged 75; was shot and killed by bandits, June 15.

Donald Platt Osborne, Kalamazoo, Mich.; University of Michigan Medical School, Ann Arbor, 1902; member of the Michigan State Medical Society; aged 55; on the staff of the Borgess Hospital, where he died, April 28, of pneumonia.

Ada Theodosia Hobby, Brooklyn; New York Medical College and Hospital for Women, New York, 1886; on the staffs of the Prospect Heights and Brooklyn Maternity hospitals; aged 75; died, June 13, of cerebral hemorrhage.

Silas Warren Saxton ✦ Steubenville, Ohio; Jefferson Medical College of Philadelphia, 1903; served during the World War; aged 55; died, May 16, in the Mercy Hospital, Pittsburgh, of uremia and chronic nephritis.

Plomer Julius Gustin, Bedford, Iowa; University of Nebraska College of Medicine, Omaha, 1927; member of the Iowa State Medical Society; aged 39; died, May 27, in Fort Meade, S. D., of a gunshot wound.

Arthur Harry Meyers ✦ Mystic, Conn.; Medico-Chirurgical College of Philadelphia, 1902; past president and secretary of the New London County Medical Society; aged 54; died, June 2, of heart disease.

Samuel Goldstein ✦ New York; University of the City of New York Medical Department, 1892; aged 64; for many years on the staff of the Midtown Hospital, where he died, May 20, of uremia and nephritis.

Samuel Lawrence Joyner, Ashland, La.; Memphis (Tenn.) Hospital Medical College, 1903; member of the Louisiana State Medical Society; aged 58; died, May 28, in a sanatorium at Shreveport, of chronic nephritis.

Kate Anna Mason Hogle, Mount Vernon, Iowa; Northwestern University Woman's Medical School, Chicago, 1885; member of the Iowa State Medical Society; aged 74; died, June 1, of cerebral hemorrhage.

John Ramsey Dodenhoff, Springfield, S. C.; Medical College of the State of South Carolina, Charleston, 1912; aged 48; died, June 7, in the Columbia (S. C.) Hospital, of myocarditis and hypertension.

Vernon Curry Morton ✦ Rantoul, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1897; on the staff of the Mercy Hospital, Champaign; aged 58; died suddenly, June 19, of angina pectoris.

Edward Aloysius Treacy, Philadelphia; Jefferson Medical College of Philadelphia, 1913; aged 50; died, June 1, in the Frankford Hospital, of carcinoma of the cecum and peritonitis.

Charles Wilbur Stroup, Ludlow, Ky.; Cincinnati College of Medicine and Surgery, 1902; veteran of the Spanish-American and World wars; aged 54; died, May 26, of coronary embolism.

Ulysses Grant Auer, Marion, Ind.; University of Michigan Medical School, Ann Arbor, 1901; formerly on the staff of the Peoria (Ill.) State Hospital; aged 65; hanged himself, June 1.

George Edward Penn, Marvell, Ark.; Louisville (Ky.) Medical College, 1886; served during the World War; aged 69; died, May 31, in the U. S. Veterans' Hospital, Memphis, Tenn.

William A. Johnston, Roanoke, Va.; College of Physicians and Surgeons, Baltimore, 1881; aged 71; died, May 30, at his home in South Roanoke, of carcinoma of the stomach.

Thomas Blakeney Holmes ✦ Oakland, Calif.; Medical Department of the University of California, 1891; aged 68; died, May 12, in the Peralta Hospital, of myocarditis.

Noah Danley, St. Joseph, Tenn.; Vanderbilt University School of Medicine, Nashville, 1901; member of the Tennessee State Medical Association; aged 75; died, May 6.

Augustus Charles Schwartz, Toledo, Ohio; Howard University School of Medicine, Washington, D. C., 1890; aged 74; died, June 8, of carcinoma of the esophagus.

Martin Luther Finkbiner, Parkerford, Pa.; Medico-Chirurgical College of Philadelphia, 1906; aged 64; died, May 30, of cerebral hemorrhage with dementia.

Winston Rives Haynes, Silver Spring, Md.; Georgetown University School of Medicine, Washington, D. C., 1923; aged 42; was found dead, June 8, of heart disease.

Frederick Aloid Sedlacek, Omaha; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; aged 67; died, May 30.

Herbert Carroll Ober ✠ Newton, Mass.; Boston University School of Medicine, 1916; aged 48; died, June 10, in the Winchester (Mass.) Hospital, of pneumonia.

Robert C. Talbot, Broken Bow, Neb.; Miami Medical College, Cincinnati, 1870; formerly member of the school board and city council; aged 87; died, May 12.

Romuald Tessier, Montreal, Que., Canada; School of Medicine and Surgery of Montreal, 1897; served during the World War; aged 59; died, May 10.

David Reeves Stockton, Lancaster, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1900; aged 66; died, May 4, of chronic endocarditis.

Thomas Robert Plumer ✠ Trivoli, Ill.; Northwestern University Medical School, Chicago, 1930; aged 28; was killed June 24, in an airplane accident.

Burton Dwight Stone, Baltimore; University of the City of New York Medical Department, 1882; aged 74; died, May 13, of carcinoma of the prostate.

Malcolm M. Crowder, Kensington, Ga.; Southern Medical College, Atlanta, 1886; member of the Medical Association of Georgia; aged 74; died, May 7.

Walter Ervin Seay, Jacksonville, Fla.; Kentucky School of Medicine, Louisville, 1904; aged 61; died, May 11, of perforated ulcer of the stomach.

Arthur C. Bell, Oklahoma City; University of Louisville (Ky.) School of Medicine, 1891; aged 74; was found dead, May 13, of heart disease.

Samuel Sheldon Robinson, Tulsa, Okla.; Kansas City (Mo.) Hahnemann Medical College, 1903; aged 74; died, May 25, in a local hospital.

James A. Stothart, Savannah, Ga.; University of Georgia Medical Department, Augusta, 1888; aged 80; died, May 13, of cerebral hemorrhage.

Newton R. Eastman, Mount Vernon, Ohio; Starling Medical College, Columbus, 1895; aged 62; died, June 16, of heart disease.

Leroy S. Barnes, Lynn Haven, Fla.; Pulte Medical College, Cincinnati, 1881; Civil War veteran; aged 92; died, April 21.

Peter G. Pritchett, Timberlake, N. C. (licensed in North Carolina, year unknown); aged 87; died, April 10, of myocarditis.

William Elias Whyte, Philadelphia; Howard University School of Medicine, Washington, D. C., 1920; aged 47; died, June 6.

Jacob Carson Tilson, Marshall, N. C.; Tennessee Medical College, Knoxville, 1892; aged 74; died, June 15, of heart disease.

Edgar W. Rine, Winchester, Ind.; Starling Medical College, Columbus, 1885; aged 75; died, June 5, of heart disease.

Fannie Emanuel, Chicago; Chicago Hospital College of Medicine, 1915; aged 61; died, March 31, of diabetes mellitus.

Benjamin Lee Jean, Dellrose, Tenn.; Vanderbilt University School of Medicine, Nashville, 1896; aged 62; died, June 3.

Harry Homer Goyer, North Little Rock, Ark.; Memphis (Tenn.) Hospital Medical College, 1909; aged 48; died, May 12.

Joseph Warren Sanborn ✠ Waldoboro, Maine; Medical School of Maine, Portland, 1894; aged 65; died, March 5.

V. J. Brown Sr., Buckhead, Ga.; Tennessee Medical College, Knoxville, 1905; aged 56; died, May 30.

John C. Buttemiller, Cincinnati; Medical College of Ohio, Cincinnati, 1877; aged 80; died, May 18.

W. Mark Patterson, Seattle; Eclectic Medical Institute, Cincinnati, 1886; aged 81; died, May 29.

Kince Manly Counce, Martin, Tenn. (licensed in Tennessee in 1905); aged 58; died, April 22.

James M. Adkins, Liberty, Mo.; Kansas City Medical College, 1880; aged 76; died, June 2.

Joseph A. Farmer, Milstead, Ga.; Atlanta Medical College, 1891; aged 76; died, May 15.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Var-ne-sis for Rheumatism.—Var-ne-sis Co., Lynn, Mass. Composition: Essentially sodium salicylate, extracts of plant drugs, including licorice, with alcohol and water. Fraudulent therapeutic claims.—[*N. J. 18052, 18053, 18057; August 1931.*]

Marshall's Cubeb Cigarettes.—James B. Horner, Inc., New York, N. Y. Composition: Ground cubeb. For catarrh, hay fever, asthma, etc. Fraudulent therapeutic claims.—[*N. J. 18054; August 1931.*]

Hydras.—John Wyeth & Bro., Philadelphia, Pa. Composition: Essentially extracts of plant drugs including hydrastis, with alcohol, glycerin, sugar and water. For female disorders. Fraudulent therapeutic claims.—[*N. J. 18056; August 1931.*]

Pike's Centennial Salt Rheum Salve.—J. J. Pike & Co., Chelsea, Mass. Composition: Essentially petrolatum with a small amount of sassafras oil. For salt rheum, corns, diphtheria, etc. Fraudulent therapeutic claims.—[*N. J. 18063; August 1931.*]

Potasafras.—Columbia Chemical Corp., Columbus, Ohio. Composition: Essentially potassium iodide, compounds of sodium and magnesium, sulphates, a trace of phosphate, benzoic acid, extracts of plant drugs including licorice, with sugar, alcohol and water. For blood disorders, etc. Fraudulent therapeutic claims.—[*N. J. 18065; August 1931.*]

Herst's Intestinal Cleanser.—Health Food Laboratories, Kansas City, Mo. Composition: Essentially ground senna, alfalfa, licorice, chamomile and anise. Fraudulent therapeutic claims.—[*N. J. 18072; August 1931.*]

Antiseptic Konoids.—Konoid Co., New Orleans, La. Composition: Essentially tannin, salicylic acid and boric acid in cocoa butter. For female troubles. Fraudulent therapeutic claims.—[*N. J. 18073; August 1931.*]

Gold Thread Syrup Compound A.—Gold Thread Syrup Co., Inc., South Berwick, Me. Composition: Essentially creosote, extracts of plant drugs, with sugar, water and mint flavoring. For coughs, bronchitis, indigestion, etc. Fraudulent therapeutic claims.—[*N. J. 18076; August 1931.*]

Burton's Relief.—Carolina Medicine Co., Littleton, N. C. Composition: Small quantities of extracts of plant drugs, with colchicin and water and red coloring. For rheumatism, blood disorders, etc. Fraudulent therapeutic claims.—[*N. J. 18077; August 1931.*]

Neo-Cultol.—Arlington Chemical Co., Yonkers, N. Y. Composition: A Bacillus Acidophilus preparation. For auto-intoxication. Misbranded and adulterated. Fraudulent therapeutic claims.—[*N. J. 18079; August 1931.*]

Hakka Cream Compound.—Hakka Chemical Co., Boston, Mass. Composition: Essentially petrolatum, boric acid, menthol, camphor, and traces of carbolic acid and hexylresorcinol. For catarrh, hay fever, etc. Fraudulent therapeutic claims.—[*N. J. 18080; August 1931.*]

Thall's Rheumatic Tablets.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Acetphenetidin (acetanilid) 2 grains per tablet, quinine (1.5 grains per tablet), small proportions of extracts of plant drugs and caffeine. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Tal-O-Rub.—McKesson Hall Van Groder Co., Cleveland. Composition: Essentially extract of red pepper with eucalyptol, menthol and camphor in a petroleum ointment base. For croup, lumbago, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 20152; June 1933.*]

Granger Liver Regulator.—Granger Medicine Co. (Estorge Drug Co.), New Iberia, La. Composition: Essentially senna and a small amount of other plant material. For dyspepsia, kidney and liver disorders, etc. Fraudulent therapeutic claims.—[*N. J. 20155; June 1933.*]

Thall's Antiseptic Roots.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Coarsely ground bitter dock and cranesbill. For leucorrhea and gleet, ulcers and sores. Misbranded because of fraudulent therapeutic claims. Adulterated because of low strength drugs.—[*N. J. 20157; June 1933.*]

Thall's Cough Syrup.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Plant drug extracts, a benzoic acid compound, tar, a small quantity of creosote, with sugar, alcohol (5.24 per cent) and water, flavored with caramel. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Thall's Female Tonic.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Essentially plant drug extracts, sodium benzoate, sugar, alcohol (4.9 per cent) and water. For profuse menstruation, menorrhagia, etc. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Thall's Female Tablets.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Extracts of plant drugs and strychnine (0.023 grain per tablet). For menstrual irregularities. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Indian New Discovery.—Justice Drug Co., Greensboro, N. C. Composition: Essentially chloroform, ether, ammonia, volatile oils including camphor, turpentine and sassafras, with alcohol and water. For rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 20151; June 1933.*]

Thall's Kidney Tonic.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Essentially plant drug extracts including valerian, a trace of alkaloids, and small quantities of volatile oils including peppermint, with sugar, alcohol (4.46 per cent) and water. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Thall's Nerve Syrup.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Essentially plant drug extracts including valerian and licorice, a trace of alkaloids, with sugar, alcohol (4.28 per cent) and water, caramel flavored. For epilepsy, hysteria, convulsions, etc. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Thall's Lung Tonic.—Thall's Home Remedy Laboratory, Manchester, N. H.—Composition: Essentially plant drug extracts including wild cherry and licorice, with sodium benzoate, sugar, alcohol (2.0 per cent by volume) and water. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Thall's La Grippe Capsules.—Thall's Home Remedy Laboratory, Manchester, N. H. Composition: Quinine sulphate (0.7 grain per capsule), ammonium chloride, camphor and extracts of plant drugs. Fraudulent therapeutic claims.—[*N. J. 20157; June 1933.*]

Creme Crede.—Scientific Products Laboratories, Lincoln, Neb. Composition: Essentially boric acid, tragacanth, glycerin, a small amount of lactic acid, traces of phenolic compound, and a volatile oil and water. For female disorders and "feminine hygiene." Fraudulent therapeutic claims.—[*N. J. 20158; June 1933.*]

Hutchison's Big Head Liniment.—Hutchison Medicine Co., Texarkana, Tex. Composition: Essentially turpentine oil, petroleum oil and a trace of mercuric chloride. Fraudulent therapeutic claims.—[*N. J. 20159; June 1933.*]

Hutchison's Magic Oil.—Hutchison Medicine Co., Texarkana, Tex. Composition: Essentially oleoresin of red pepper with small amounts of camphor, peppermint oil, a salicylate, and tannin, alcohol, a trace of chloroform, and water. Fraudulent therapeutic claims.—[*N. J. 20159; June 1933.*]

Biz.—Henderson & Skipworth, San Francisco. Composition: Essentially carbolic acid, camphor and alcohol (6.3 per cent). For skin disorders. Fraudulent therapeutic claims.—[*N. J. 20160; June 1933.*]

Sinapole Ointment.—The Sinapole Co., Los Angeles. Composition: Petrolatum with volatile oils, including mustard oil. For pleurisy, rheumatism, pneumonia, etc. Fraudulent therapeutic claims.—[*N. J. 20164; June 1933.*]

Scarlet Red Salve.—Heilkraft Medical Co., Boston. Composition: Petrolatum, boric acid, a zinc compound, eucalyptus oil, and a red dye (Scarlet R). For varicose ulcers, eczema, etc. Fraudulent therapeutic claims.—[*N. J. 20165; June 1933.*]

Armstrong's Granular Effervescent Lithia Compound.—Armstrong Chemical Co., Boston. Adulterated because below professed standard in strength and purity. Misbranded because claimed to contain caffeine citrate, which it did not.—[*N. J. 20166; June 1933.*]

Arium.—Fuller-Morrison Co., Chicago. Composition in each tablet, 2.6 millimicrograms of radium and 0.02 milligram of strychnine. Misbranded because statement "Radium in Tablets" was false and misleading, since they also contain strychnine; also because of false and fraudulent therapeutic claims.—[*N. J. 20168; June 1933.*]

Brander's No. 7.—Haley M-O Co., Inc., Geneva, N. Y. Composition: Essentially small quantities of soap, phenols, glycerin and water (99%). For "feminine hygiene," female disorders, etc. Not antiseptic when diluted with equal volume of water. Fraudulent therapeutic claims.—[*N. J. 20171; June 1933.*]

W. H. D. Special Stomach Medicine.—W. H. D. Special Mfg. Co., Woodston, Kan. Composition: Essentially the carbonates of calcium and magnesium, with baking soda. Fraudulent therapeutic claims.—[*N. J. 20175; June 1933.*]

Caf-Acetan.—John Wyeth & Bro., Inc., Philadelphia, Pa. Adulterated and misbranded because represented to contain 10 grains of acetanilid to the ounce, whereas the correct amount was 8.4 grains.—[*N. J. 20551—February 1934.*]

Papoose Root Beer.—E. A. Zatarain & Sons, Inc., New Orleans. Composition: Essentially extracts of plants with glycerin and water, colored with caramel and flavored with sassafras and wintergreen. Fraudulent therapeutic claims.—[*N. J. 20553—February, 1934.*]

Diano for Diabetes.—Samaritine Co., Philadelphia. Composition: Essentially chloride of lime (approximately 1 per cent), a trace of chlorine, glycerin (approximately 16 per cent) and water (approximately 83 per cent). Fraudulent therapeutic claims.—[*N. J. 20555—February 1934.*]

LaSalle's Diutone Tablets.—LaSalle Medicine Co., Los Angeles. Composition: Extracts of plant drugs including buchu and juniper with saltpeter. For kidney and bladder disorders, etc. Fraudulent therapeutic claims.—[*N. J. 20577—February 1934.*]

LaSalle's Uter-Tol Tonic Tablets.—LaSalle Medicine Co., Los Angeles. Composition: Plant material including tannin, with resins, valeric acid and volatile oils. For female disorders. Fraudulent therapeutic claims. [*N. J. 20557—February 1934.*]

Correspondence

PYRETHRUM SENSITIZATION COMPLICATING HAY FEVER

To the Editor:—Commercial "Pyrethrum" is widely used for its toxic effects in various types of insecticides. The flowers of certain species of pyrethrum plants, of the genus Chrysanthemum, are used for the preparation of the substance, and closed flowers, which contain much pollen, apparently are the most satisfactory. For some years it has been known that dermatitis and allergic manifestations in the respiratory tract may occur as the result of exposure to this toxic material.

Ramirez (Pyrethrum, *J. Allergy* **1**:149 [Jan.] 1930) reported two cases, one of sensitiveness to grass and the other to ragweed pollen, in which sensitization rhinitis occurred after the regular pollen seasons had terminated. These patients were found to be sensitive to pyrethrum and had been exposed to insecticides containing it.

Feinberg (Pyrethrum Sensitization, THE JOURNAL, May 12, 1934, p. 1557) called attention to the frequency of sensitization to pyrethrum in the ragweed pollen sensitive group. He believes that sensitivity to it occurs only in ragweed pollen sensitive patients because both plants in question belong to the order of Carduales. This author feels that such sensitivity is the cause of hitherto unexplained attacks of hay fever or asthma during months exclusive of the usual hay fever season.

Pyrethrum sensitization offers still another problem in hay fever other than postseasonal allergic symptoms. It is the matter of exposure to insecticides containing pyrethrum as an explanation of apparently unsuccessful treatment with pollen extracts one season, whereas in previous years such treatment had been successful. Such cases have been seen. One was that of an individual sensitive to ragweed pollen, and the other that of a patient sensitive to Russian thistle in a part of the United States where ragweed is of minor importance:

A young woman sensitive to giant ragweed had received very satisfactory relief in the preceding two years by treatment with injections of pollen extract. In the summer in question, after at least half the ragweed season had been passed asymptomatically the patient began to suffer from the symptoms of sensitization rhinitis. A widely used "fly powder" was suspected as the result of questioning. Skin tests were positive for pyrethrum, and relief was obtained by discontinuing the use of the insecticide.

A young man sensitive to Russian thistle had been quite satisfactorily relieved from hay fever by pollen extract treatment in previous summers. Though relief had not been complete, results were satisfactory as contrasted to the severe symptoms he had had before treatment. One summer he began to clerk in a grocery store during the Russian thistle season and noted the symptoms of hay fever almost every evening. He suspected "Flit," which was liberally sprayed about the store at closing hours. A positive skin test to pyrethrum was obtained. Elimination of insecticides was followed by relief of hay fever symptoms.

It may be concluded that:

1. Pyrethrum, commonly used in insecticides, may cause hay fever and asthma.

2. A patient may have coexistent sensitivity to this substance and to pollens of grasses and weeds.

3. Exposure of such an individual to an insecticide containing pyrethrum may explain the apparent failure of desensitization for hay fever in a case theretofore successfully treated.

R. H. KAMPMEIER, M.D., New Orleans.
Assistant Professor of Medicine, Louisiana
State University Medical Center.

PSORIASIS AND CLIMATE

To the Editor:—I was much interested in your answer to Dr. Albert M. Crance of Geneva, N. Y., in Queries and Minor Notes (THE JOURNAL, June 2, p. 1873), concerning the frequency of psoriasis in tropical countries. Although I agree that the disease in question seems to be less frequent in the tropics, it is by no means a rarity. Kayser, quoted by Ormsby (Diseases of the Skin, New York, Lea & Febiger, 1921, p. 261), states: "In the tropics, the subjects of psoriasis are few, and the symptoms of the disease, when they develop at all, are rudimentary, the typical eruption being scarcely ever produced." Kayser writes of the disease in the Dutch East Indies and his contentions may be true so far as they concern the colored races, in which psoriasis is very rare. In the whites residing in the tropics the disease is frequent and offers the same characteristics observed elsewhere. Another cutaneous disease that is thought by many to be rare in the tropics is lupus erythematosus. Contrary to this statement, lupus erythematosus seems to be more frequent in Cuba than in the United States. Vitiligo, which is supposed to be very common in tropical countries, is actually less frequent than psoriasis in Cuba. Tuberculosis of the skin, lupus vulgaris in particular, is very rare. The following statistics are self explanatory. My own observations are based on a total of 7,042 cases of skin diseases exclusive of syphilis:

Disease in Tropical Countries

	Personal Statistics	Statistics of American Dermatological Association *
Psoriasis	1.121 per cent	2,650 per cent
Lupus erythematosus	0.922 per cent	0.356 per cent
Vitiligo	1.022 per cent	0.250 per cent
Lupus vulgaris	0.071 per cent	0.234 per cent

* J. Cutan. Dis., April 1914, p. 312.

V. PARDO-CASTELLO, M.D., Havana, Cuba.

PRISON PHYSICIANS

To the Editor:—I have read with great interest the communication in THE JOURNAL, May 19, by Dr. James L. McCartney, director of the Classification Clinic of Elmira Reformatory and secretary of the Medical Section, American Prison Association.

My knowledge of prisoners and prisons has been gleaned only from one prison during twelve years of medical service as resident physician, State Institutions, Howard, R. I., over a decade ago. I have had the impression that the medical service of the prisons in the United States was excellent, and that under such a service the condition of the prisons and the state of the prisoner's health was benefited and conserved. From what I have read of the methods of modern penology, there has been a great uplift all the way along, both in the prisoner's morale and in his physical environments. Those physicians whom I had met at some of the prison conventions, far from being the "derelicts of medicine," appeared to be men well versed in modern methods of treatment, had pride in their work, and apparently had the confidence and esteem of the prison warden. In fact, in the days to which I refer the outstanding trio, or "triple alliance," was the warden, the prison physician and the chaplain. The combined efforts of these men usually was of great importance to the prison morale, for discipline was tempered with the kindness and mercy that are the feature of medical and religious training.

There are several factors to be taken into consideration in the employment of the medical service of prisons and other penal or reformatory institutions. In the first place, the annual appropriation in all such institutions is wofully inadequate and is usually gotten through the legislature by a good deal of jockeying and paring down in all departments. The less assertive and usually subordinate departments, as the medical, are apt to remain stationary. Increases in salary are small and promotion is slow, and the incumbents of these positions remain as they were engaged; e. g., "prison physician." If there is difficulty in obtaining appropriations for medical service and supplies, this service tends to remain stationary, if not retrogressive.

It would seem as if the advancement of the medical service in prisons might well be urged by THE JOURNAL, and that this important social service be not left entirely to the care of the "derelicts" and "cast offs" of the medical profession.

In all prisons there is ample opportunity for the physician to do good work, for the building up both of the morale and of the physical condition of the prisoners, for in many instances when they fall sick and are removed for a time to the hospital ward, away from the irritating discipline of the daily routine, the more kindly treatment and atmosphere of the medical environment has been in many instances the first step toward the reformation and the redemption of the prisoner, and that really should be the ultimate aim of all those engaged in this form of service. Certainly the lamentations of Dr. McCartney would be a timely topic for discussion before the Medical Section of the American Prison Association at its next meeting.

HENRY A. JONES, M.D., Auburn, R. I.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VOMITING IN INFANCY

To the Editor:—For four months a girl, aged 20 months, has vomited nearly every night after one or two hours of sleep. She awakens crying. If left lying quiet she will vomit, and also if she is taken up. Her nutrition and growth are fair. The only illnesses have been infections of the upper respiratory tract, sometimes accompanied by otitis media. A slight rise in temperature is usually accompanied by a mild convulsion. The vomiting occurs nightly regardless of whether she is sick or well. Her parents are very nervous. Except for probable laxness in habit training, she has been well cared for. What are possible causes for such a conditon? How may a diagnosis be arrived at? Please give suggestions for treatment. Kindly omit name. M.D., Michigan.

ANSWER.—It does not seem possible to answer this question categorically. It is obvious that vomiting as it occurs in a baby aged 20 months may be due to a variety of causes, and in order to arrive at a definite conclusion a painstaking examination will be required in order to exclude a number of possibilities. It seems, however, that the significant points, as stated in the query, are the previous history of otitis media, and fever accompanied by convulsions associated with vomiting. Vomiting may be due to pyloric stenosis, though this usually occurs in young infancy and does not come up for consideration in this case. Infants suffering from gastro-intestinal diseases or peritonitis usually have abdominal pains as well as vomiting and a variety of other symptoms that have not been noted in the case of this infant. Vomiting may occur also during an attack of catarrhal jaundice or may result from the presence of foreign bodies in the gastro-intestinal tract. It also should be noted that vomiting may be caused by various vegetable and mineral poisons, such as acids, alkalis, poisonous gases and a variety of drugs, especially emetics and expectorants, and it may also be due to the ingestion of spoiled food. The history of the patient would indicate the presence or absence of any of these factors. Vomiting may occur also as the result of nephritis, chronic uremia, cystopyelitis and diabetes. Repeated examination of the urine would clear up the diagnosis, if any of these factors should be present.

One would also think of cyclic vomiting, which, however, occurs more frequently during the day and is usually associated

with persistent moderate fever and great prostration. In these cases the urine nearly always shows the presence of acetone and diacetic acid, and the breath has a sweetish, aromatic odor.

Vomiting may occur also in chronic nasal and faucial infections, adenoid vegetations, hypertrophy of the tonsils and acute sinusitis, though aside from the ethmoid sinuses the others are not developed at this early age. In acute otitis media in young life, vomiting, convulsions and delirium with a rise in temperature are frequently observed. Vomiting may be associated with epileptic seizures as well as with the rarely occurring attacks of migraine at this age. In epilepsy the convulsive seizures are characteristic; in migraine there would be evidence of pain and great restlessness.

One should bear in mind the possibility of an intracranial process in this case. The history of recently suppurating ears is significant.

One would think of the possibility of a brain abscess or localized septic meningitis or thrombophlebitis; more remotely of a brain tumor, hemorrhage of the brain and encephalitis or cerebral sclerosis. In a thrombophlebitis the temperature is apt to be remittent, whereas in a septic meningitis the temperature is continuously high, and in brain abscess the temperature may be only slightly elevated with irregular remissions below normal. The vomiting in these conditions may be projectile but is more frequently regurgitant. The most common symptoms of brain abscess are vomiting, headache, choked disk, constipation, subnormal temperature and slow pulse. Not all of these symptoms are present in any one case, nor are they all present as a rule at the onset of the disease. Next to headache, vomiting is the most frequent symptom, though in an encysted abscess the vomiting may be entirely absent. The important point about vomiting, if it is present, is that it may be projectile, sometimes regurgitant, and it occurs without nausea. Choked disk, if present, signifies increased intracranial pressure and constitutes an important link in the diagnosis of abscess or tumor.

It is true that vomiting may occur in the course of acute otitis media, but, if it persists, an intracranial complication should be suspected.

In short, the solution of the problem at hand depends on the process of reasoning by exclusion. A carefully elicited history and examination of the blood and especially the urine, and a complete neurologic examination with the investigation of the special sense organs, should aid materially in differentiating an organic lesion from a functional disorder.

ERYTHEMA NODOSUM

To the Editor:—A farmer's son, always healthy, developed, at the age of 2, a circumscribed red swelling on the dorsal surface of the right forearm. This swelling was hard and somewhat tender and about 38 mm. in diameter. The boy was then taken to a physician, who thought that, with heat, the swelling would suppurate and would then have to be opened. Accordingly, heat was applied, but this did not result in any change in the lesion. All treatment was discontinued and the lesion disappeared spontaneously in about three weeks. A larger lesion of the same type and appearance appeared at the same site two years later, at about the same period of the year, as far as I could learn. This time an ice pack was applied, with the same negative results. The lesion disappeared about two weeks after the discontinuance of treatment, three and a half weeks after its inception. When seen by me, on about the middle of November, when the patient was 9, he had been free from the ailment for the last six years. Physical examination revealed absolutely nothing of significance, as far as the various systems were concerned. The family history was also entirely negative. There was no elevation of temperature. On the right forearm, extending from the midline of the dorsal side to about the midline of the medial border and from about two fingerbreadths above the wrist to about the same distance caudad from the elbow, appeared an oval area of dark red induration and elevation. The swelling, rising to about 20 mm. above the rest of the forearm, was sharply delimited but the redness faded gradually into the natural color of the rest of the body. The lesion was firmly attached to the muscles underneath and was somewhat tender to the touch. The patient stated, however, that he could sleep well on that side. The skin over the lesion did not seem particularly hot. The father was concerned principally because of the danger of the lesion involving a joint at some future attack. He stated that the lesion never grew in size, once established; the whole area was involved at the outset. The child felt perfectly well and played with other children all day. Laboratory examination revealed: Urinalysis, no albumin, sugar nor casts; specific gravity, 1.022; reaction, alkaline. Blood: white count, 8,200; polymorphonuclears, 72 per cent; large lymphocytes, 9 per cent; small lymphocytes, 11 per cent; large mononuclears, 7 per cent; mast cells, 0; eosinophils, 3 per cent; blood pressure, 108 systolic, 44 diastolic. A biopsy was suggested but refused. The patient was urged to come back but did not. He can be located, however, if necessary. What is your suggestion as to the diagnosis and treatment of this case? Kindly omit name and town.

M.D. Wisconsin.

ANSWER.—It is always hazardous to make a diagnosis from a written description, but the description of the lesions together with the location and the fact that the lesions persisted for about three weeks would strongly suggest the diagnosis of erythema nodosum. This condition is not uncommon and in the United States is regarded as due to influences similar to those which cause rheumatic disturbances, although the disease is not a part of rheumatic fever. The fact that there were 72 per cent of the polymorphonuclear leukocytes in the blood, a high figure for a boy of 9, would tend to confirm the diagnosis of an infectious process. The treatment of erythema nodosum is symptomatic and salicylates have commonly been used with relief of symptoms. Foci of infection should be searched for and eradicated if found.

The differential diagnosis would involve such other conditions as urticaria and tularemia, but urticaria is never characterized by a persistent lesion. The wheals in this condition come and go; and while the whole condition may last over long periods of time the individual lesions rarely persist more than one or two days and are characterized by white centers and by itching. The 3 per cent eosinophilia must be considered normal and not indicative of urticaria.

In tularemia the history of contact with rabbits and the presence of a local ulcer should make the diagnosis clear. Furthermore, tularemia does not recur.

DIFFERENTIAL DIAGNOSIS OF SKIN LESION

To the Editor:—I have under my care a woman, aged 28, who has two fixed eruptions on her body, one being on the left side of her neck and about 30 mm. in diameter, the other, over the right scapula, being about 38 mm. in diameter. These areas appeared two years ago, three days after parturition. The labor and puerperium were otherwise normal. These areas are flat, are purplish brown, become sore near each menstrual period and then become scaly on top. The scales come off and there is no more sensation until the next menstrual period. Occasionally (every three or four months) these areas become studded with blebs, ranging in size from a pinhead to a split pea. These last for a number of days and spontaneously disappear without rupturing. When these blebs are in evidence the areas itch severely. At the time these areas appeared the patient was taking fluidextract of ergot and no other drug. At the time of their appearance they were very small and are continuously enlarging. The Wassermann and Kahn blood reactions are negative, as is the past history. Could you from this description supply me with a diagnosis and an adequate treatment? Kindly omit name.

M.D., Kentucky.

ANSWER.—Ths case might be (1) a fixed drug eruption, (2) recurrent herpes simplex, (3) dermatitis factitia—self-inflicted injury, or (4) dermatitis dysmennorrheica symmetrica of Matzenauer and Polland.

1. Fixed eruptions due to arsphenamine, neoarsphenamine, antipyrine, phenolphthalein, amidopyrine and alurate (allyl-isopropyl-barbituric acid) a constituent of allonal (allylisopropyl-barbituric acid with amidopyrine), are well known and not rare. The case under discussion seems to fit the description of these fairly well, the lesion becoming inflamed and sometimes vesicular or bullous after the ingestion of the drug. This inflammation then subsides and leaves pigmentation of the whole area involved. At the next use of the drug the same process occurs, usually involving a greater area and often one or several new areas. It is stated that no drug except fluidextract of ergot was being taken. Patients often forget to mention to the doctor drugs considered household remedies. They have been known to deny repeatedly the use of phenolphthalein, for instance, only to confess finally that they did take it but considered it unimportant. This matter must be thoroughly investigated.

2. Herpes simplex sometimes recurs in the same place at frequent intervals. This is particularly apt to occur at the menstrual periods. It is usually confined to one area and seldom leaves much pigmentation. It is nearly always vesicular, while vesicles occurred in only two of the attacks. Local roentgen treatment with small doses, one-fourth erythema dose once a week for not more than eight doses, and the administration of calcium in large doses, 3 or 4 Gm. of calcium lactate three times a day after eating, are the best methods of treatment.

3. Self inflicted injury to the skin occurs in hysterical patients for the purpose of attracting interest or sympathy or to obtain compensation. The lesions are often of a peculiar shape, angular or with a streak below the main patch where the liquid cauterant used, usually phenol, has run down. Often one or several areas of hysterical anesthesia may be found. Proof of the guilt of the patient may be obtained by sealing the involved area with a dressing that prevents access to the skin. It must really prevent access to the skin, for these patients are sly and often outwit the doctor. If the lesions are self inflicted they quickly heal by this method. Further proof may be obtained by suggesting that at a certain time a new lesion will appear in some particular area.

4. The dermatitis of Matzenauer and Polland is characterized by a succession of (*a*) burning or tingling sensations, (*b*) erythema, (*c*) edema, (*d*) vesiculation, (*e*) exudation, (*f*) hemorrhage, (*g*) crust formation and (*h*) pigmentation, some cases going on to necrosis. It was held by many critics to be dermatitis factitia, for the patients are neurotic and the lesions on the extremities are elongated. The authors recognized that this would be claimed and made every effort to prove that the lesions were not self inflicted. The case under discussion occurred first soon after parturition and no mention is made of dysmenorrhea, which is an important feature of the Matzenauer and Polland disease. Nothing is said of follicular exudate or hemorrhage, which are also important. The fact that the lesions are not exactly symmetrical may be disregarded, for in Wise and Parkhurst's case (So-called Dermatitis Dysmenorrheica, *Arch. Dermat. & Syph.* **2**:725 [Dec.] 1920) they were unilateral. Treatment should be directed to relief of the dysmenorrhea. This may not succeed, however, in preventing the dermatitis.

INCUBATION PERIOD OF RABIES IN DOGS

To the Editor:—I should like to know for how long a period it is advisable to keep a dog under observation for the development of rabies after it has bitten a person. I should also like to know in case a dog has been inoculated against rabies whether the examination of its brain would reveal actual changes and if so for how long a period after inoculation these would probably last. In other words, is a postive report on a dog that has been inoculated to be interpreted always as proof that the dog has rabies? Kindly omit my name. M.D., North Carolina.

ANSWER.—The average period of incubation of rabies in the dog is said to be from twenty-one to forty days. The period of incubation is dependent, in the main, on the place of the wound of entrance, its relation to nerves, and of course the amount and virulence of the virus introduced. It may be recalled that in dogs rabies may be diagnosed from the symptoms, from finding Negri bodies and certain characteristic anatomic changes in the central nervous system, and by inoculation of animals. The symptoms are often highly suggestive and occasionally even highly characteristic, but the final diagnosis in most cases will rest on the examination of the nervous system and, in special cases, on animal inoculation. In the present state of knowledge, the finding of typical Negri bodies in a dog must be regarded as proof of the presence in the dog of rabies even if the dog in question has been inoculated with killed rabies vaccine.

RINGWORM INFECTION OF HANDS AND FEET

To the Editor:—A man, aged 33, has an intractable tineal infection of the toes, feet, right hand and scalp. The primary focus was in the fourth interdigital spaces of the feet and was incurred about 1920 while the patient was residing in southern Florida. Iodine, dusting powders and Whitfield's ointment were used and, apparently, kept the infection in check. However, the original infection was never completely eradicated. In 1927 a body rash caused the patient to seek the advice of an eminent dermatologist in Cincinnati. It responded well to the treatment but the primary focus between the toes was not eliminated. In 1931 a vesicular erupion, which itched severely, was noted on the fingers of the right hand. A roentgen therapeutist gave a course of roentgen treatments, which caused an apparent cure for six months. Economic circumstances prevented a continuance of treatment. In 1933, severe itching of the scalp was noted. At present the infection involves the plantar surfaces of the feet, the toes, the right palm and fingers, and the scalp. Epidermophyton was isolated from the toes and the vesicles on the hand. The eruption at present is dry; scaling and fissured. The palm of the right hand is red. Kindly outline the management of this case, particularly in relation to the hand and the scalp. X-rays are out of consideration because of the remote location. Please omit name.

M.D., Indiana.

ANSWER.—The condition as described is in all probability an eczematoid ringworm infection of the hands and feet. As ringworm involvement of the scalp is exceedingly rare in adults, it is improbable that the disorder in this location has any connection with the eruption on the extremities, and it is impossible to suggest treatment for this condition without having an idea as to its probable nature.

With regard to the infection of the hands and feet, this disorder in these locations is in many instances notably rebellious to all treatment and it is necessary to try one or another of the parisiticidal preparations, which vary greatly in the results produced in different individuals. In the chronic stage of the disorder, such as is now presented, the preparation of phenylmercuric nitrate as described by Levin in THE JOURNAL, Dec. 26, 1933, has been successfully used in a number of cases. Preparations containing sulphur, salicylic acid or tar, and dyes, such as Castellani's carbolfuchsin paint, are useful. Ultraviolet radiation is also of value in some cases of this type and may be given a trial, particularly if roentgen treatment is not available.

SYPHILIS IN PREGNANCY

To the Editor:—Mr. K., aged 30, husband of Mrs. K., aged 32, presented himself to me three and one-half years ago as a blood donor for Mrs. K., then Miss D., and I discovered that he had a 4 plus Wassermann reaction. I immediately commenced active antisyphilitic treatment on Mr. K., consisting of neoarsphenamine, four courses; bismuth compounds, four courses; mercury compounds, five courses, and bismuth arsphenamine sulphonate, one course (three years). Miss D. gave negative reactions in 1931, 1932 and 1933, though she was exposed to infection during this time. Miss D. has not received any antisyphilitic treatment. The Wassermann reports on Mr. K. in 1933 were negative twice (February and July). In December 1933 Mr. K. and Miss D. were married, and one month later Mrs. K. became pregnant. At present Mr. K. is receiving 0.6 Gm. of neoarsphenamine monthly (since negative reports) and Mrs. K. has a negative Wassermann report (six weeks pregnant). What routine ought I to follow in these cases, bearing in mind that Mr. K. has never presented any syphilitic symptoms, pupillary changes, skin signs or neurologic symptoms. Mrs. K. has been well and during her pregnancy has had only slight morning sickness. Would you subject both Mr. and Mrs. K. to active antisyphilitic treatment, taking necessary precautions for a normal child? The child is due October 1. Would you repeat monthly Wassermann tests? Would you consider them as noninfectious? What instructions would you give these patients? M.D., New Jersey.

ANSWER.—The probability is that this couple will have a normal, healthy child whether treatment is administered during pregnancy or not. It would be safer, however, to give Mrs. K. at least a short course of treatment at this time as an added precaution. A monthly Wassermann test does no harm. It is difficult to answer the question of noninfectiousness without knowing more of the facts; that is, dosage of drugs used, number of treatments in each course, physical observations, spinal fluid, and so on. No special instructions need be given at this time. A little more instruction in birth control prior to marriage would have been more pertinent in view of the husband's known syphilitic infection. McKelvey and Turner's article entitled "Syphilis and Pregnancy: An Analysis of the Outcome of Pregnancy in Relation to Treatment in 943 Cases" (THE JOURNAL, February 17, p. 503) should be consulted.

SPREAD OF SCARLET FEVER

To the Editor:—1. What are the modern ideas concerning contagion in scarlet fever? Is it spread solely by nasal and throat secretions? 2. In view of the fact that the undisputed (?) etiologic factor is the non-spore forming Streptococcus scarlatinae, cultures of which can be obtained only in certain mediums under certain conditions of *p*H and temperature, is it conceivable that rooms, books, clothing and the like can convey infection to other individuals? 3. Apart from the legal aspects, is quarantine recommended for scarlet fever or "infectious precautions" as in pneumonia? In either case, for how many days? Does injection of potent antiscarlatinal serum shorten this period? Please omit name and address. M.D., China.

ANSWER.—1. Scarlet fever is usually spread by nose and throat secretions of persons who have scarlet fever, are convalescent from the disease, or are immune carriers. It may also be spread by discharges from otitis media, mastoiditis or other suppurative conditions associated with scarlet fever. The spread of scarlet fever by milk is sometimes responsible for epidemics.

2. It has been shown that the air in a room occupied by a scarlet fever patient may be contaminated. Articles in the room may likewise be contaminated. The streptococci do not live long on such objects as books and clothing. Most cases of scarlet fever attributed to using books or clothing long after a case of scarlet fever occurred in the family have probably been due to recent contact with an unrecognized carrier of scarlet fever streptococci.

3. Quarantine is recommended for scarlet fever. The quarantine should be maintained until cultures on blood agar plates are negative for scarlet fever streptococci or until susceptible persons with whom the patient may come in contact are immunized. If a potent scarlet fever antitoxin is injected early in the disease, it usually shortens the period of infectivity.

OUTFIT TO DETERMINE ICTERUS INDEX

To the Editor:—Please tell me what rating the La Motte Chemical Products Company has. How accurate are its blood chemistry outfits and especially how reliable is the icterus index test as compared with standard methods? M.D., Illinois.

ANSWER.—The various La Motte blood chemistry outfits have been designed for clinical use and probably answer this purpose very well, especially when a clinician is interested in the estimation of a single blood constituent. (The matter has been discussed in Queries and Minor Notes in THE JOURNAL, Nov. 23, 1929, p. 1673, July 11, 1931, p. 126, and June 4, 1932, p. 2011). The "Icterus Index Comparator" is a good illustration

of the principle used in most of these outfits. The method of R. C. Pigford (Simplified Apparatus and Technic for the Determination of the Icterus Index, *J. Lab. & Clin. Med.* 13:658 [April] 1928) is employed. A series of eleven bichromate standards equivalent to icteric indexes of 1, 2, 3, 5, 6, 7, 10, 15, 20, 25, 50 and 100, in small tubes of uniform bore, are employed for comparison against twenty drops of serum or plasma, obtainable from 3 to 5 cc. of blood. Although one probably would not be able to determine the exact icteric index without diluting the serum, it should be possible to gage the severity of any icterus present by comparison with these various standards.

WARTS ON EYELID

To the Editor:—A girl, aged 4, has five small warts on one eyelid. They are of the variety usually known as "seed warts." They are not pigmented. Recently one has begun to show signs of irritation, probably because the child rubs it unconsciously, although the mother never has noticed her touching it. A roentgenologist has advised me not to use x-rays over the eye, in view of the tarsal plate being present and also because of possible retinitis. Have you any references on removal of warts from such a location? There is no indication of their gradual disappearance; on the contrary, they are gradually increasing in size. Please omit name.

M.D., Pennsylvania.

ANSWER.—One or two very light applications of solid carbon dioxide will often make small warts disappear. The instantaneous application of a high frequency spark (electrodesiccation) may effect the desired result; also the instantaneous application of the actual cautery. Approximately 50 per cent of warts will disappear as a result of one or two intramuscular injections of sulpharsphenamine (0.1 or 0.2 Gm. for a child) at intervals of one month. Weekly intramuscular injections of a bismuth compound (0.065 Gm. for a child) for several weeks appears to be equally efficacious. In fact, injections of distilled water may suffice. Allington was able to obtain about the same results with distilled water as with other drugs, indicating that the effect may often be psychic, which tends to corroborate the psychic experiments on warts conducted by the late Bruno Bloch and others and to explain the disappearance of warts after the application of various innocuous substances. Because of possible danger to the eyes it is preferable to avoid x-rays and radium. Acids, because of the difficulty of controlling the depth of action and of confining the application to a tiny area, might unnecessarily injure normal tissue.

DROWNING

To the Editor:—Please give the most reliable method for examining the lung tissue from a body submerged in a river, with the idea of determining whether the body was dead before being thrown in the water, or whether the victim was drowned by falling in the river. Please omit name.

M.D., Mississippi.

ANSWER.—By examining the lung tissue only, it may not be possible to tell whether death resulted from drowning or not in all cases, but if the microscopic examination reveals in the air passages and alveoli of the lungs particles of gravel, sand, dirt or vegetable material such as may be found in water or at the bottom of water, it would be justifiable to conclude that the person was alive when he entered the water.

ENLARGED THYMUS

To the Editor:—Would you be good enough to enlighten me on the following problem: A man and his wife both in good health with no significant family history had a female child ten years ago. Five or six months after her birth the child developed symptoms of thymic asthma. Roentgenograms taken by a pediatrician showed an enlarged thymus. High voltage roentgen therapy was instituted with only fair results. She had periods of remission of varying lengths of time. Finally, at the age of 5, a blood smear was taken and showed chronic lymphatic leukemia. The child died a year later of this disease. The problem I have at hand now is this: The mother is pregnant again (two months) and needless to say is markedly upset. She fears that this child will also have an enlarged thymus and the leukemia. Is there any connection between the thymic condition and the leukemia? What possibilities are there of this child being afflicted either with the thymus, the leukemia, or both?

HENRY L. PELKUS, M.D., Boston.

ANSWER.—There is no reason to suppose that the second child will also have an enlarged thymus, as this is not a hereditary condition. For the same reason the mother should be assured that the development of a leukemia is not to be expected; a pediatrician with a wide experience states that he has not come across two leukemias in the same family. There is no connection between the enlarged thymus and the subsequent development of leukemia.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 4. Sec., Dr. W. W. Council, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written (Group B candidates).* The examination will be held in various centers throughout the country, Oct. 1. *Oral (Group A and Group B candidates).* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Sept. 8. *Application must be filed sixty days prior to date of examination.* Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Sept. 8 and San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

CALIFORNIA: Los Angeles, July 23-26. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Endorsement.* Hartford, July 24. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at centers in the United States where there are five or more candidates, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEVADA: *Reciprocity.* Carson City, Aug. 6. Sec., Dr. Edward E. Hamer, Carson City.

PUERTO RICO: San Juan, Sept. 4. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

Ohio Reciprocity and Endorsement Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports 16 physicians licensed by reciprocity and 2 physicians licensed by endorsement, April 3, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Rush Medical College		(1930)	Wisconsin
State University of Iowa College of Medicine		(1930), (1931)	Iowa
Johns Hopkins University School of Medicine		(1929)	W. Virginia
University of Maryland School of Medicine and College of Physicians and Surgeons		(1926)	Maryland
Detroit College of Medicine and Surgery		(1933)	Michigan
University of Michigan Medical School		(1928), (1930), (1931)	Michigan
St. Louis University School of Medicine		(1933)	Missouri
University of Buffalo School of Medicine		(1930)	Penna.
Leonard Medical School, N. Car.		(1913)	W. Virginia
Eclectic Medical College		(1929)	Kentucky
Jefferson Medical College of Philadelphia		(1930)	Penna.
Vanderbilt University School of Medicine		(1931)	Tennessee
University of Wisconsin Medical School		(1929)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Cincinnati College of Medicine		(1929)	N. B. M. Ex.
Western Reserve University School of Medicine		(1930)	N. B. M. Ex.

Hawaii April Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held in Honolulu, April 9-12, 1934. Four physicians were examined, all of whom passed. One physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Stanford University School of Medicine		(1932)	83.4
Rush Medical College		(1934)	81.4
Creighton University School of Medicine		(1933)	86.1
University of Pennsylvania School of Medicine		(1932)	88.6

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Toronto Faculty of Medicine		(1931)	N. B. M. Ex.

Washington January Report

Mr. Harry C. Huse, director, Department of Licenses, reports the written examination held in Seattle, Jan. 18-20, 1934. The examination covered 7 subjects. A grade of 60 per cent in each subject was required to pass. Sixteen candidates were examined, all of whom passed. Thirteen physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of California Medical School		(1933)	78.4
Loyola University School of Medicine		(1928)	70
Northwestern University Medical School		(1932) (1933)	81.5, 76.1,* 79.8, 80.1,* 89.7

Rush Medical College	(1930)		75
University of Illinois College of Medicine	(1933)	84,*	86.4*
University of Michigan Medical School	(1927)		76.5
University of Minnesota Medical School	(1932)		81.2*
Creighton University School of Medicine	(1933)		77.7
University of Nebraska College of Med.	(1931)	74.1,	(1932) 87.1
University of Oregon Medical School	(1932)		76.5

LICENSED BY RECIPROCITY

School	Year Grad.	Reciprocity with
Northwestern University Med. School	(1932)	California, (1933) Oregon
Rush Medical College	(1933)	California
State University of Iowa College of Medicine	(1932)	Iowa
Tulane University of Louisiana School of Medicine	(1922)	Louisiana
Univ. of Michigan Medical School	(1928)	Minnesota, (1929) Penna.
St. Louis University School of Medicine	(1920)	Missouri
Creighton University School of Medicine	(1931)	California
University of Oklahoma School of Medicine	(1932)	Oklahoma
University of Oregon Medical School	(1929),	(1932) California
Jefferson Medical College of Philadelphia	(1926)	Minnesota

LICENSED BY ENDORSEMENT

School	Year Grad.	Endorsement of
University of Minnesota Medical School	(1932)	N. B. M. Ex.

* This applicant has completed his medical course and will receive his M.D. degree on completion of internship.

Book Notices

Brucella Infections in Animals and Man: Methods of Laboratory Diagnosis. By I. Forest Huddleson, Department of Bacteriology and Hygiene, Michigan State College. Introduction by Ward Giltner, Dean, Division of Veterinary Medicine, Michigan State College. Cloth. Price, $2.25. Pp. 108, with 24 illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1934.

This concise, lucid and timely monograph is offered by the author as an aid to the laboratory worker in the study of Brucella (Alcaligenes) diseases. It is also designed to provide the clinician with an interpretation of the results derived from the use of laboratory methods of diagnosis. Huddleson defends the thesis that there are three separate species of Brucella organisms: Brucella melitensis (Bruce), the true host of which is the milch goat; Brucella abortus (Bang), the cause of infectious abortion of cattle, and Brucella suis (Traum), associated with swine infection. All three species are known to be capable of producing undulant (Malta) fever in human beings, either as the result of the ingestion of raw dairy products containing living organisms or by way of the skin through contact with infected animals and their excretions. Many students of the disease question the belief that there are three separate species of Brucella. The similarity of the morphologic appearance of the organisms, cultural characteristics, behavior in agglutinin-absorption tests, and the similarity of the diseases which they produce in human subjects lead many observers to conclude that the apparent differences in virulence, world distribution, nitrogen and dextrose metabolism, carbon dioxide requirements, growth behavior toward aniline dyes, and the differences in nitrate and nitrite reduction are explainable on the basis of host adaptation. The methods of isolation of the organisms, the pathology, bacteriology and serology of the disease, in animals and man, are adequately treated. The clinician will be particularly interested in the chapters that treat of the diagnostic significance of the allergic (skin-test) methods, the opsonocytophagic test and the agglutination test.

You Must Relax: A Practical Method of Reducing the Strains of Modern Living. By Edmund Jacobson, M.D. Cloth. Price, $1.50. Pp. 201, with 27 illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1934.

This is a popular presentation of the material found in the author's "Progressive Relaxation" and is intended primarily for the layman. Relaxation is advocated, in general, as an everyday remedy against the effects of strenuous modern living, and specifically as a means of curing or alleviating, by itself or in combination with other treatment, a variety of conditions ranging from "overactive nerves" and sleeplessness to high blood pressure and mucous colitis. The author repeatedly points out the differences between his method and those employed by advocates of autosuggestion and similar cults. He encourages skepticism on the part of both the physician and the patient. He warns of the danger of self treatment and self training in relaxation, as one "is often mistaken as to whether he has been successful and consequently may fall into wrong habits of tension." Real progress in relaxing can be determined only by electrical measurements with a delicate and costly apparatus developed by the author. The book would be of great practical value if the author had already succeeded in "selling" his theory and practice of progressive relaxation to the medical profession and now wished to tell the lay public what it was all about. Unfortunately the only instrument that will differentiate between "cultivated" and "ordinary" relaxation is the one in the author's possession, and he clearly cannot take care of all the millions of people who "must relax." However, the book is of some educational value. It is well written in a facile conversational style and should prove of interest not only to laymen but to physicians as well.

Bacteriologia. Pelo Dr. José Pedro de Carvalho Lima, Director do "Instituto Bacteriologico de São Paulo." Paper. Pp. 553, with illustrations. São Paulo: Sociedade Impressora Paulista, 1933.

This book is patterned after well known English and American textbooks on bacteriology. Jordan, Ford, Zinsser, Park and Williams, Topley and Wilson and many others are not only referred to frequently but the author handles the subject in much the same way as the English writers. The book is divided into five parts. The first or introductory part is a treatise on the bacteria in general. The second part discusses infection and immunity. This portion is concise and short. It touches only the most important aspects of this phase in bacteriology. The third part describes the salient characteristics of the pathogenic bacteria. The arrangement of this part is not as detailed, systematic or accurate as that found in English textbooks of bacteriology; the differentiating morphologic and cultural characteristics are not discussed in sufficient detail. Only the more common and well known pathogens are included, and closely related bacteria are omitted. In the genus Mycobacterium, for example, only the tubercle and lepra bacilli are described, and differentiating characteristics of other acid-fast organisms are not stated. The fourth part describes infectious diseases in which the causative organism is as yet undetermined. The author describes a "typhus exanthematicus of São Paulo" in which he has demonstrated "Rickettsia brasiliensis" in the endothelial cells in the peritoneum of guinea-pigs inoculated with virus. In this fourth part a chapter on bacteriophage is included. The underlying principles are briefly discussed. The fifth part, consisting of only three pages, outlines the bacteria commonly found in milk and water. A supplementary portion describes the common pathogenic fungi and protozoa. This part is of little value to students or physicians, since the descriptions are too brief and there are no illustrations.

Practical Pedodontia or Juvenile Operative Dentistry and Public Health Dentistry: An Introductory Text for Students and Practitioners of Dentistry. By Floyde Eddy Hogeboom, D.D.S., Professor of Children's Dentistry, College of Dentistry, University of Southern California. Special chapters by Forrest Anderson, M.D., ScD., Director, Child Guidance Clinic of Los Angeles and Pasadena, Harold Hawkins, D.D.S., Thaddeus P. Hyatt, D.D.S., F.A.C.D., Director, Dental Department Metropolitan Life Insurance Co., and Harry E. Straub, D.D.S., Special Instructor in Exodontia and Minor Surgery. Third edition. Cloth. Price, $6.50. Pp. 327, with 259 illustrations. St. Louis: C. V. Mosby Company, 1933.

This is intended as a textbook and reference authority for students and practitioners of dentistry for children. In his introduction the author properly emphasizes the importance of dentistry for children. He stresses the fact that all children require the consultation and assistance of a dentist and that adequate dental care in childhood would prevent a large proportion of the dental difficulties of maturity. The chapters on the management of children in the dental office and on mental hygiene, the latter by Forrest N. Anderson, are fully as interesting and important to those having the responsibility for the care of children as to the doctor. The fourth chapter, on embryology, is a brief and sketchy outline of the early stages of embryologic development. Since most dental students have two years of preprofessional collegiate training, the inclusion of such a chapter in a textbook becomes less and less important. It cannot be made extensive enough to satisfy the demands of those who are interested. The fifth and sixth chapters are devoted to the growth and development of the individual as well as to the development of the teeth and dentures. These subjects are of great importance to all interested in the care of children, and it is gratifying to see them occupying more space in such textbooks. In general, the technical

chapters are excellent; included are cavity preparation, filling materials, roentgenography and the various operative phases of the subject. The directions with reference to extraction of the first permanent molars should be modified to emphasize the seriousness of the loss of this tooth. The sentence "The erupting second permanent molar will move forward and fill the space without tipping" (page 137) should either be removed or be modified. At present it leaves an erroneous impression. Dr. Thaddeus P. Hyatt's chapter, based as it is on the examination of more than 12,000 persons, is worthy of careful consideration. The chapter of Dr. Harold F. Hawkins, on prevention of dental caries by nutrition, is an excellent presentation of the work of this investigator. While the theoretical explanations may or may not be correct, his clinical methods are giving gratifying results in the control of dental disease. The chapter on endocrinology and its relation to dentistry summarizes the generally accepted beliefs in this field. The chapter on public health in dentistry deserves special commendation; especially is the inclusion of this subject in such a work to be commended. The book will be found interesting and profitable for students in this field.

Les dilatations des bronches: Clinique, pathogenie, diagnostic et traitement. Par Michel Léon-Kindberg, médecin des hôpitaux de Paris. Paper. Price, 22 francs. Pp. 126, with 19 illustrations. Paris: Masson & Cie, 1934.

This is an excellent presentation, in compact form, of the views of one of the highest authorities in France on the subject of bronchiectasis. For diagnosis the author advises the use of two methods: one, the introduction of iodized poppyseed oil by the catheter passed through the nose; the other, bronchoscopy. Minute instructions are given for a special technic in the making of the roentgenograms. The advantages of bronchoscopy in the author's opinion are that it not only enables a diagnosis but gives valuable information as to the condition of the mucosa, the abnormalities at the bifurcation, the diameter of the bronchi at various levels, the pathology of the narrowings, and the presence or absence of neoplasms. In connection with the description of the clinical features, the matter of treatment is carefully considered. The author's experience has been unfavorable with lobectomy except in extremely rare cases. Progressive exeresis is regarded as involving excessive risk, though occasionally curative. Collapse he regards as but rarely indicated. In the final paragraph the following statements are made: "Almost always bronchoscopic methods constitute the treatment of choice. It is palliative in most of the cases and if used early has resulted in definite cures without any risk." The technic of bronchoscopy is not given. The author is an internist who has seen much of the bronchoscopic work of André Soulas.

Recent Advances in Psychiatry. By Henry Devine, O.B.E., M.D., B.S., Medical Superintendent, Holloway Sanatorium, Virginia Water, Surrey, England. Second edition. Cloth. Price, $4. Pp. 364. Philadelphia: P. Blakiston's Son & Company, Inc., 1933.

When the first edition of this book was reviewed, it was pointed out that it was an excellent summarization of the best of the tremendous literature in the fields of neurology and psychiatry. The same comment can be made of the present edition. The book serves as a worthy supplement to the conservative psychiatric textbooks, and it is carefully done. As in the earlier edition, one finds that the organic and physiologic factors in the psychoses are chiefly stressed, and there is much emphasis placed on those changes in the psychoses which may be artificially produced. The larger number of chapters deal with the infections, toxins and somatic factors as well as with somatic conditions in the psychoses. For some time the literature of psychiatry has been much in need of some of the material in this book, particularly that which summarizes such subjects as those discussed in part IV under the titles "blood sugar studies," "basal metabolism," "deficient oxidation" and the "psychogalvanic reflex." Some space is given to the biopsychic types and also to certain phases of psychology as applied to the psychoses. The last section deals chiefly with psychology from the freudian point of view, with an occasional mention of Jung. Psychotherapy, child psychiatry and nursing are but briefly touched on, but this brevity is only to be expected in view of the obvious limitations of space imposed on the writer of a book such as this one. All in all, the book remains an excellent summary of the literature, and the new chapters and paragraphs that have been inserted have added greatly to the usefulness of this study. The leaning toward the organic, which has been mentioned as characterizing this volume, is excusable in view of the fact that there is a companion volume treating of the psychoneuroses.

Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics. By Alfred Korzybski. Cloth. Price, $5.50. Pp. 798, with illustrations. International Non-Aristotelian Library Publishing Company. Lancaster, Pennsylvania: Science Press Printing Company, 1933.

In spite of its title, this book is neither scientific nor sane; it is merely ponderous. It is the first volume of a series of books dealing with non-Aristotelian logic. As the volume runs to almost 800 pages it is not susceptible to summarization, particularly since it is so abstract. The chief principle of Aristotelian logic is an attempt to find similarities, and the present author criticizes this, saying that abstractions should be found, and hence that the most valid science that can be brought to bear on life is mathematics. He feels that mathematics is a group of patterns of relational language, which reveals at its various steps the workings of the human mind; and he stresses the fact that much of the difficulty that the human mind experiences is in grasping meanings which he calls "semantic structures." The entire book is a combination of various abstruse interpretations of linguistics and mathematics, which will be found rather difficult of comprehension for one who is not trained in logic—and algebraic logic, at that. This author's information is derived from such varied sources as Aristotle and Niels Bohr, Isaac Newton and C. S. Sherrington and William A. White. Since he points out that mental adjustment is a purely linguistic matter, this author would seem to be well adjusted, but to the psychiatrist there seems to be little of value in the book. There are vast chapters dealing with abstruse mathematical problems and others treating of linguistics, only two of which can be definitely tied up with psychiatry, and these only from the aspect that they represent a summing up of such ideas about the nervous system as may bear a relationship to the author's theories. However, future issues, which are to discuss more specific subjects, may add something to make this type of thinking more palatable.

Beiträge zur Kenntnis der septischen Pleuraempyeme unter besonderer Berücksichtigung der Spätresultate. Von Evert Schildt, Med. Lic. Inaugural Dissertation zur Erlangung der medizinischen Doktorwürde, Upsala. Paper. Pp. 205, with illustrations. Uppsala: Almqvist & Wiksells Boktryckeri, a. B., 1931.

This monograph, which is an inaugural dissertation with a selected bibliography, consists of a general discussion of type, etiology, pathogenesis, diagnosis, bacteriology, complications and treatment of acute and chronic empyema and their complications, with results as to permanent healing, recurrence, causes of death and degree of rehabilitation. It includes 289 case reports. The treatment for the most part was by open drainage by means of subperiosteal rib resection or intercostal incision. In seven cases immediate symptoms were suggestive of acute collapse of the lung with mediastinal flutter. Four of these patients died shortly following operation. The closed method of drainage was used in only four cases. The total mortality was 18.6 per cent. The study is thorough, systematic and comprehensive and is well worth careful perusal by those interested in the subject.

The Hospital Manual of Operation. By Warren P. Morrill, Ph.B., M.D. Cloth. Price, $3. Pp. 315, with 19 illustrations. New York: Lakeside Publishing Company, 1934.

This contains chapters on organization, staff organization, planning and construction, admission and discharge procedures, purchase and issuance, nursing department, dietary department, housekeeping, mechanical department, special equipment, clinical records, fire protection, accounting and public relations. The author gives a valuable discussion on each of these subjects. The book does not pretend to be a complete guide for any single job in the hospital. It gives a great deal of information not included in similar works. The bibliography at the end of each chapter should be of assistance where the works referred to are available.

Medicolegal

"Mariguana" Defined.—The defendant, Navaro, was convicted on an information charging him with possessing marihuana, under the Utah statute providing that:

"It shall be unlawful for any person, firm, or corporation to sell, furnish, or give away, or offer to sell, furnish, or give away, or to have in possession, any cocaine, opium, morphine, codeine, heroin, peyote (mescal button) alpha eucaine, beta eucaine, nova caine, *flowering tops and leaves, extracts, tinctures, and other narcotic preparations of hemp or loco weed (cannabis sativa, Indian hemp), mariguana,* or chloral hydrate, or any of the salts, derivatives, or compounds of the foregoing substances, or any preparation or compound containing any of the foregoing substances, or their salts, derivatives, or compounds, excepting upon the written order or prescription of a physician, dentist or veterinary surgeon licensed to practice in this State. . . ." *Comp. Laws Utah, 1917, Sec. 4432, as amended by Laws of Utah, 1927, Ch. 65.*

On appeal to the Supreme Court of Utah, Navaro contended that the term "mariguana," as used in the statute, signified a plant, not a drug; that the statute did not forbid the possession of "mariguana" but forbade only the possession of its flowering tops and leaves and the tincture, extract, and other preparations of it; and that therefore the possession of "mariguana" was not an offense under the statute.

The word "mariguana," said the court, is not found in most of the ordinary dictionaries of the English language and is not directly defined in any of the medical or scientific dictionaries available to the court. It is not a scientific name, either of a plant or a drug, but is a word in local use, of comparatively recent origin in the United States. Several variants of the word are in use, all meaning the same thing, as marijuana, mariahuana, marajuana, maraguana, and marihuana. The growing body of literature with respect to marihuana and its uses is found in magazines and newspapers, rather than in scientific works. The Encyclopaedia Britannica, edition 14, volume 2, page 420, however, correlates marihuana to cannabis when it defines hemp as cannabis sativa and says:

Other forms are cultivated for the narcotic drug cannabin, known in different forms and in different countries as hasheesh, bhang, gunga, charras, kif, and *marijuana,* in India, Arabia, Africa and Mexico.

Terry and Pellens, in "The Opium Problem," 1928, page 809, make a similar correlation, saying:

More recently, another group of drugs has found its way into the anti-narcotic laws of a number of the states. This group is included under the genus of cannabis sativa, which includes the two species cannabis indica and cannabis americana. . . . This drug is also known under the Spanish name of *Mariahuana.*

The use of the word marihuana by physicians, chemists and police officers, and by persons who smoke it, has been recognized by the Supreme Court of Utah in *State* v. *Diaz,* 76 Utah 463, 290 P. 727, wherein the court quoted at length the testimony of a physician regarding the nature and effects of the preparation, and it was referred to again in *State* v. *Franco,* 76 Utah 202, 289 P. 100. In *State* v. *Bonoa,* 172 La. 955, 136 So. 15, the defendant, charged with having possession of plants known as marajuana, under a statute making it unlawful to possess such plants, contended that there was no such plant and that the terminology of the statute conveyed to the people no conception of what was prohibited. But the court said:

We do not find any difficulty in holding that the use of the word "marajuana," in connection with the word "plant," conveys to the mind exactly what the Legislature intended to convey, namely, the plant scientifically known as Cannabis Indica or Cannabis America [sic], though there possibly may be some slight and unimportant botanical difference between the two, but apparently none in its effects upon the human system. It is true that the word is not found in dictionaries ordinarily used, but it is found in the American Illustrated Medical Dictionary, where it is spelt "Mariahuana," and in the Encyclopedia Britannica (1929, 14 Ed.), in the article on "Hemp," where it is spelt "Marijuana," and in the statutes of at least two other states, namely, New Mexico, where it is spelt "Mariguana" (Chapter 42 of Laws of New Mexico, 1923, p. 58), and Texas, where it is spelt "'Marijuana" (Vernon's Annotated Criminal Statutes, 1925, vol. 2. Pen. Code, chapter 3, art. 720). In these statutes the word seems to be used in reference to some drug or preparation from the plant Cannabis Indica or Cannibis [sic] Sativa. However, the application of the name of the drug or preparation to the plant, as, for instance, the "plant known as Marajuana," could hardly be misleading, even assuming that the word more properly refers to the drug or preparation than to the plant itself.

Laws of Colorado, 1927, chapter 95, section 1, page 309, refer to "Cannabis Indica, or Cannabis Sativa, commonly known as Indian Hemp, Hasheesh, or *Marijuana.*" The Texas statutes (Complete Texas Statutes, 1928, art. 720, p. 1107 [Vernon's Ann. P. C., art. 720]) refer to "canabis (cannabis) indica, canabis (cannabis) sativa or preparations thereof or any drug or preparation from any canabis (cannabis) variety, or any preparation known as *marijuana.*" Laws, New Mexico, 1923, chapter 42, section 1, page 58, refer to "cannibas [sic] indica, also known as hashish and *mariguana.*" The Montana Statute (Rev. Codes Mont., 1921, sec. 3186, as amended by act of March 8, 1927, ch. 91, sec. 1) refers to "mariahuana (Cannabis Indica)." In the *American Journal of Police Science,* volume 2, page 252, Eugene Stanley, district attorney, parish of Orleans, New Orleans, says:

Marihuana is the Mexican term for Cannabis Indica. The plant or drug known as Cannabis Indica, or Marihuana, has as its parent the plant known as Cannabis Sativa.

It would seem, said the Supreme Court, that the word "mariguana," when used without modifying words, indicates the product or preparation consisting of the flowering tops, leaves and seeds of Cannabis sativa, rather than either the whole plant or the fibrous stocks thereof. Although it is used indiscriminately in some articles with reference to the plant, the drug or the flowering tops and leaves of Cannabis sativa, the preponderant use of the word, the court thought, clearly had reference to the product used for smoking. That use was so frequent and common that when the statute prohibited the unauthorized possession or sale of "mariguana" as a drug, no one could misunderstand its meaning. The information under which the defendant was convicted charged the unlawful possession of "mariguana," in the language of the statute, and that was sufficient.

The contention of the defendant that he had been erroneously convicted because the state had not proved that he did not possess the marihuana found on his person, on the written order or prescription of a licensed physician, dentist or veterinary surgeon, the court held to be without merit, quoting 49 C. J. 1053:

Where the statute relating to poisons or narcotic drugs contains exceptions, a defendant desiring to avail himself of any of them by way of defense must show that he comes within its intent. Thus the burden is upon one accused of illegal possession to show that his possession was lawful under a proviso or exception of the statute under which he is being prosecuted. . . ."

The judgment of the trial court was affirmed.—*State v. Navaro (Utah), 26 P. (2d) 955.*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Sept. 9-14. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.

American Association of Railway Surgeons, Chicago, August 20-22. Dr. Louis J. Mitchell, 21 East Van Buren Street, Chicago, Secretary.

American Congress of Physical Therapy, Philadelphia, Sept. 10-13. Dr. Nathan H. Polmer, 921 Canal Street, New Orleans, Secretary.

American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. Kendall Emerson, 50 West 50th Street, New York, Executive Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 19-22. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.

Idaho State Medical Association, Lewiston, Sept. 7-8. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Michigan State Medical Society, Battle Creek, Sept. 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

National Medical Association, Nashville, Tenn., August 13-18. Dr. C. A. Lanon, 431 Green Street, South Brownsville, Pennsylvania, General Secretary.

Nevada State Medical Association, Reno, Sept. 21-22. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

Northern Minnesota Medical Association, Brainerd, Sept. 10-11. Dr. Oscar O. Larsen, Detroit Lakes, Secretary.

Pacific Northwest Orthopedic Association, Seattle, Sept. 1. Dr. J. C. Brugman, 1215 Fourth Avenue, Seattle, Secretary.

Western Branch of American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. W. P. Shepard, 600 Stockton Street, San Francisco, Secretary.

Washington State Medical Association, Spokane, Sept. 10-13. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Wisconsin, State Medical Society of, Green Bay, Sept. 12-14. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, St. Louis

17: 475-578 (June) 1934

Ocular Findings in a Series of Intracranial Fibroblastomas. T. B. Holloway, Philadelphia.—p. 475.
Practical Trial Lenses and a Trial Set. E. Jackson, Denver.—p. 487.
Malingering Tests. A. B. Bruner, Cleveland.—p. 490.
Intracapsular Versus Extracapsular Extraction of Cataract. H. S. Gradle, Chicago.—p. 497.
Chemistry of Lens: IV. Nature of Lenticular Proteins. A. C. Krause, Baltimore.—p. 502.
Voluminous Orbitocranial Osteoma, Consequent Cerebral Abscess of Nasal Origin. J. N. Roy, Montreal.—p. 515.
Causes of Reactions Following O'Connor Cinch Shortening Operation. G. N. Hosford and A. M. Hicks, San Francisco.—p. 520.
Extracapsular Cataract Extraction Combined with Posterior Capsulotomy. D. T. Atkinson, San Antonio, Texas.—p. 522.

American Journal of Public Health, New York

24: 433-570 (May) 1934

Exposure as a Factor in the Age Distribution of Measles, Diphtheria and Poliomyelitis. W. L. Aycock, Boston.—p. 433.
Isolation Time of Scarlet Fever. J. E. Gordon and G. F. Badger, Detroit.—p. 438.
*Evidence that Bacillus Alkalescens (Andrewes) May Be a Variant of Bacillus Typhosus: Preliminary Report. Ruth Gilbert and Marion B. Coleman, Albany, N. Y.—p. 449.
Practical Method for Public Health Laboratory Diagnosis of Infectious Syphilis. H. E. McDaniels, Chicago.—p. 452.
Standard Methods and New Procedures for the Isolation of Colon Bacilli from Water. C.-E. A. Winslow, New Haven, Conn.—p. 456.
Studies on Acidophilus Milk. C. N. Stark, Ruth Gordon, J. C. Mauer, L. R. Curtis and J. H. Schubert, Ithaca, N. Y.—p. 470.
*Vaccine Prepared from Chicken Embryo Cultures for Immunization Against Smallpox. Julia M. Coffey, Albany, N. Y.—p. 473.
Effect of Temperature of Incubation on Agar Plate Count of Milk. C. S. Pederson and M. W. Yale, Geneva, N. Y.—p. 477.
Microbiologic Examination of Fresh and Frozen Fruits and Vegetables. F. W. Tanner, Urbana, Ill.—p. 485.
Detection of Carriers Among Food Handlers in Connecticut. D. Evelyn West, E. K. Borman and F. L. Mickle, Hartford, Conn.—p. 493.
Differential Reactions in the Colon Group of Bacteria. M. Levine, S. S. Epstein and R. H. Vaughn, Ames, Iowa.—p. 505.
Relative Values in Tuberculosis Case Finding. R. E. Plunkett, Albany, N. Y.—p. 511.
Development of Public Health Administration in the Province of Quebec. A. Lessard, Quebec.—p. 515.
Diphtheria Prevention in Chicago: The Health Officer's Problem. H. N. Bundesen, Chicago.—p. 519.
Contribution of Public Health Nursing to Maternity, Infancy and Preschool Age Group. Agnes G. Talcott, Los Angeles.—p. 525.
Child Hygiene: Maternal Deaths; Brief Report of Study Made in Fifteen States. R. A. Bolt, Cleveland.—p. 527.

Bacillus Alkalescens a Variant of Bacillus Typhosus.—Gilbert and Coleman offer information concerning eight cases of typhoid. Cultures of both Bacillus typhosus and B. alkalescens were isolated from specimens from these patients. One of the cases represents a laboratory infection. The patient had been handling cultures of both species. Although typhoid bacilli were readily obtained from this patient's blood during the first two weeks of illness, they were isolated with difficulty from the early fecal specimens, while B. alkalescens was apparently present in relatively large numbers. Later, both types were numerous, and, finally, neither was found. The significance of B. alkalescens in this case can only be conjectured. Its presence previous to the illness is unlikely, since it persisted and disappeared at about the same time as the typhoid bacilli. Therefore it can be concluded that either a strain of B. alkalescens may have been the incitant, which, after entering the body, developed into a true typhoid bacillus, or, if B. typhosus was ingested, the other species may have been its variant. The authors show that strains of bacteria having the properties of B. alkalescens are present in approximately 1 per cent of all specimens submitted for bacteriologic examination for evidence of enteric disease. Clinical and epidemiologic data suggest a close relationship to the typhoid bacillus. In the study of specimens from patients recovering from typhoid and in the search for carriers, the presence of this type of micro-organism seems of special import. Even though, in itself, it may have no pathogenic significance, the fact that in so many instances B. typhosus has been isolated from the same or other specimens from the person concerned makes a thorough search for this micro-organism imperative, whenever strains of B. alkalescens are found. When suspected typhoid carriers are concerned, it would seem important to examine a large series of fecal specimens and, if possible, duodenal contents.

Chicken Embryo Cultures for Immunization Against Smallpox.—Coffey states that vaccine virus, when cultivated for long periods in a medium consisting of minced chicken embryo tissue suspended in Tyrode's solution, gradually decreases in potency according to the cutaneous reactions induced in rabbits. The potency of the culture virus can be regained by passage through the testicles of rabbits. Vaccines prepared from chicken embryo cultures can be stored at low temperatures for considerable periods without loss of potency if air is excluded. Children vaccinated with culture vaccine developed characteristic primary vaccinia, but the proportion of takes was lower than that among children vaccinated with calf lymph, when either the multiple puncture or single scratch method is used. Since the culture vaccine is both potent and stable, further study should be carried out to determine a method of preparing it for distribution so that it will equal calf lymph in efficacy.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

31: 581-720 (May) 1934

Duodenitis and Its Roentgenologic Characteristics. B. R. Kirklin, Rochester, Minn.—p. 581.
Roentgen Diagnosis of Coronary Disease. G. Levene, F. E. Wheatley and Helen Matthews, Boston.—p. 588.
Roentgen Evidence of Extensive Calcification of the Kidneys in Osteitis Fibrosa Cystica. Alice Ettinger and H. Magendantz, Boston.—p. 593.
*Roentgen Ray as Aid in the Diagnosis of Hemophilia. E. L. Rypins, Iowa City.—p. 597.
Diverticulum of the Gallbladder. J. H. Vastine, Philadelphia.—p. 603.
Roentgen Diagnosis of Diseases of the Colon: Evaluation of Methods. H. M. Weber, Rochester, Minn.—p. 607.
Reaction of Transplantable Mouse Sarcoma No. 180 to Radiations of Different Wave Lengths (200 Kilovolt Roentgen Rays and Gamma Rays). K. Sugiura, New York.—p. 614.
The Present Status of Roentgen Therapy with Voltages Above 200 Kilovolts: Technical Development and Medical Application. T. Leucutia and K. E. Corrigan, Detroit.—p. 628.
Quantitative Method for Studying the Roentgen-Ray Absorption of Tooth Slabs. S. L. Warren, F. W. Bishop, H. C. Hodge and G. Van Huysen, Rochester, N. Y.—p. 663.
*Radon Ingestion and Its Possible Health Dangers. H. H. Barker, New York.—p. 673.
Transverse Fracture of the Sacrum: Report of Case. W. E. Allen Jr., St. Louis.—p. 676.

Roentgen Ray as Aid in the Diagnosis of Hemophilia.—Rypins presents three cases of hemophilia, with comments on other cases in the literature, which, in his opinion, all showed characteristic changes in the roentgenograms. These roentgenograms revealed marked widening and deepening of the intercondylar fossa, with arthritic changes in the remainder of the joint. The blood supply in the knee joint enters at the intercondylar fossa. Klason considers that bleeding occurs at the point of attachments of the crucial ligaments, at the apex of the intercondylar fossa. Bleeding causes bone deterioration, and it is conceivable that the pressure from the bleeding would cause erosion, at this point, since at the apex of the intercondylar fossa there is no cartilage. However, Key believes that possibly intra-osseous hemorrhage plays an important part. While in tuberculosis of the knee joint there may be some widening and deepening of the intercondylar fossa, it does not reach the extent that it does in hemophilia and there is apt to be more destruction of cartilage. Proliferative changes are readily explained by the receding hemorrhages. Since trauma is supposed to be the exciting cause of the hemorrhages, the knee joint is the most logical to study, as it is more exposed to trauma and apt to show the more advanced changes. Hemorrhagic purpura sometimes causes bleeding into the knee joint but apparently does not cause enough bleeding to bring about changes demonstrable in the roentgenogram. Low grade infectious arthritis may cause widening and deepening of the intercondylar fossa,

although not commonly, but in this type of condition, in the cases which the author observed, there is apparently no proliferation. The hereditary history and the ordinary laboratory observations would, of course, tend to rule out other conditions. Klason considers the enlargement and widening of the intercondylar fossa an especially distinct feature of hemophilia. The one patient who received ovarian extract has done remarkably well. Heuffer reports that irradiation of the spleen has given some temporary benefit, on the basis that thrombokinase has been liberated.

Radon Ingestion and Its Possible Health Dangers.—Barker points out that the exposure of an operator in a dial painting laboratory to the emanation in the atmosphere of the laboratory does not in all probability constitute a hazard. Based on typical working conditions the exposure to alpha rays is no more than it would be if 0.00004 microgram of radium element was permanently deposited in the system, a quantity insignificant in comparison with the safe tolerance of the individual. Alpha radiation resulting from the polonium formed from the active deposit is at the best nominal and probably about 2 per cent of the alpha radiation produced by the radon. The chances for any accumulation of the active deposit of slow change in the system are practically nil. The possibility of any harmful effects resulting from the ingestion of radon as administered therapeutically either by inhalation or by injection is remote.

American Journal of Tropical Medicine, Baltimore

14: 207-298 (May) 1934

Differential Pathology of Dysentery. G. R. Callender, Baltimore.—p. 207.
Studies on the Pathology of Amebic Enteritis in Dogs. E. C. Faust and E. S. Kagy, New Orleans.—p. 221.
*Studies on Effect of Feeding Ventriculin, Liver Extract and Raw Liver to Dogs Experimentally Infected with Endamoeba Histolytica. E. C. Faust and E. S. Kagy, New Orleans.—p. 235.
*Carbarsone Rectally in Amebiasis. H. H. Anderson and A. C. Reed, San Francisco.—p. 257.
*Untoward Effects of Antiamebic Drugs. H. H. Anderson and A. C. Reed, San Francisco.—p. 269.
Attempts to Transmit Trypanosoma Cruzi Chagas with Ticks of the Genus Ornithodoros. L. H. Dunn, Panama.—p. 283.
Reduviid Bug, Eratyrus Cuspidatus Stal., Naturally Infected with Trypanosoma Cruzi Chagas Found in Panama: Notes. L. H. Dunn, Panama.—p. 291.

Desiccated Hog Stomach, Liver Extract and Raw Liver in Experimental Endamoeba Histolytica.—Following a preliminary test of the benefit of feeding raw liver to dogs infected with Endamoeba histolytica, Faust and Kagy compared the relative efficacy of desiccated hog stomach, desiccated liver extract and raw liver, fed by mouth to infected dogs. The series includes five positive animals inoculated intracecally with human strains of E. histolytica, subsequently treated with desiccated hog stomach; five positive animals, similarly inoculated and subsequently treated with desiccated liver extract, and nine animals, similarly inoculated, of which seven were treated with raw liver before inoculation and two after infection was established. Ninety-four dogs similarly infected but untreated and others uninfected were used as controls. Desiccated hog stomach was found to be consistently harmful to the host, not only being ineffectual in checking the invasion of the amebas but actually reducing the resistance of the tissues of the wall to secondary bacterial invasion. Liver extract was found to be beneficial to the host, and it appreciably arrested the amebic process. This was indicated by the improved appearance of the animal, the tendency toward formed stools with sluggish or encysted amebas and the evidence of repair of the damaged tissues on gross and microscopic postmortem examination. In most animals, however, the control was only partial and never produced spontaneous cure. Raw liver was found to be helpful in arresting the amebic process and in certain cases produced complete eradication of the pathogenic organism. Clinical "cure" is not conclusive evidence of complete eradication of the amebas. The evidence suggests that the efficacy of the liver feedings consists not in its stimulating action on the hematopoietic organs but by direct contact with the tissues which the amebas attack. It is not amebacidal but amebastatic. Growth and multiplication of the amebas are arrested, they may encyst in the tissues as well as in the lumen of the intestine, and the healing process is appreciably activated. The tendency of liver to neutralize the toxic effects of histamine and other degeneration products of proteins in the lumen of the intestine conceivably aids the healing process and reduces the danger of bacterial invasion.

Carbarsone Rectally in Amebiasis.—Anderson and Reed began treatment in twelve cases of amebiasis by instilling into the rectum, after a cleansing enema, 200 cc. of a 2 per cent solution of sodium bicarbonate containing 1 per cent carbarsone. A rapidly acting sedative, such as sodium amytal orally in a dosage of 0.2 Gm., was given beforehand to induce sleep and allow the patient to retain the drug overnight, if possible. If the retention enema was expelled during the night, the treatment was repeated until at least five enemas were retained overnight. Usually this procedure was attempted on alternate nights until 10 Gm. of the drug had been given. In the majority of cases, prompt symptomatic relief followed. It was not necessary to place the patient in a hospital except when he could not be cared for at home. Since the treatment was given at night, it did not interfere with the usual daily activities of the patient. No untoward symptoms or contraindications to the method were noted. Dysenteric symptoms were relieved by using carbarsone rectally, but amebas were not eradicated completely. Oral therapy was resorted to, and eight of the group received the usual dosage of 5 Gm. of carbarsone in ten days, given twice a day in gelatin capsules containing 0.25 Gm. of the drug. In two cases this course was repeated, and in two more a third series of capsule administration was necessary. Other drugs were tried in combination with carbarsone. Seven of the group received adjuvants in addition to carbarsone rectally, and the stools of five of these remained negative during an average follow-up period of five and one-fourth months. The remaining five who had been given carbarsone alone, orally and rectally, were ameba free during the observation period. From three to six daily stool specimens were examined every two to four weeks during this period. Special search failed to reveal evidence of drug toxicity in any patient. No kidney, liver, eye or other damage from carbarsone was noted. Sigmoidoscopic examinations of nine patients following therapy revealed ulceration of the mucosa of the sigmoid area in only one case. This patient had been refractory to all forms of therapy tried over a period of twelve months but was clinically improved and had gained 7.5 Kg. during the year of observation. Weight gains occurred in more than half of the series, and the symptom response was favorable in every case.

Untoward Effects of Antiamebic Drugs.—Anderson and Reed point out that emetine hydrochloride is toxic for most mammals, including man, in total doses from 10 to 25 mg. per kilogram of weight. The heart muscle bears the burden of the toxic effect. The maximal safe total dose of emetine hydrochloride is 10 mg. per kilogram of weight in patients with an amebic hepatitis and free from heart damage. No untoward effects have been observed with the use of the kurchi alkaloids. Acetarsone may exhibit toxic manifestations in one of every six cases treated. The case of a patient showing intolerance to 5 Gm. of this agent taken over a period of twenty-eight days is reported. Acetarsone, in the authors' opinion, is too toxic for routine clinical use. Animal experiments emphasize this point. Carbarsone has been given to 330 patients in total doses (orally and rectally) ranging from 75 to 2,100 mg. per kilogram of weight in divided amounts over a period of fifteen months. A single instance of intolerance is reported in a patient with acute hepatitis who had an untoward reaction to 5 Gm. of the drug given in ten days. An arsenical should not be given in the presence of hepatitis. Slight gastric distress has also been noted, but no evidence of damage to the kidneys, optic nerve, skin or other tissues has been observed. Liver damage has been reported elsewhere from the use of chiniofon, but the authors have abandoned this agent because of its relative inactivity as an amebacide, using vioform in preference to chiniofon. Three of sixty patients given the drug orally in doses ranging from 100 to 1,000 mg. per kilogram of weight over a period of twelve months have experienced gastric and other distress but no other definite untoward effects. The drug cannot be used rectally because of local irritation. Since the soluble hydrochloride of vioform causes local effects on mucous membranes, it is possible that a gastric hyperacidity may be responsible for the distress experienced by these three patients. Enteric coated capsules

may eliminate this difficulty. Bismuth subnitrate may cause methemoglobinemia and on this account the use of bismuth subcarbonate should be avoided. Heptylresorcinol irritates the mucous membrane of the gastro-enteric tract and is not to be recommended as an amebacide until more adequate data on its efficiency are available.

American Review of Tuberculosis, New York

29: 489-586 (May) 1934

Hematogenous Pulmonary Tuberculosis. J. A. Miller, New York.—p. 489.
A Fluid Valve in Pyopneumothorax. H. Sutherland, London, England.—p. 521.
*Anatomic Changes in Diaphragm Following Phrenicectomy: Report of Eleven Necropsies. W. S. Stanbury, Hamilton, Ont.—p. 528.
*Correlation of Shifting Electrical Axis of the Heart with X-Ray Observations in Artificial Pneumothorax. I. Treiger and C. J. Lundy, Chicago.—p. 546.
A Portable Artificial Pneumothorax Apparatus. E. Bunta, Chicago.—p. 558.
Effects of Tuberculoprotein (MA-100) on the Course of Experimental Tuberculosis in Rabbits and Guinea-Pigs. K. C. Smithburn, F. R. Sabin and J. T. Geiger, New York.—p. 562.
Spontaneous Occurrence of a Nonacid-Fast Form in a Culture of B C G. S. S. Sidenberg and E. E. Ecker, Cleveland.—p. 571.
Certain Aspects of Pulmonary Tuberculosis in Children, with Especial Reference to Prognosis. R. Morgan, Westfield, Mass.—p. 577.

Anatomic Changes in the Diaphragm Following Phrenicectomy.—Stanbury gives an analysis of eleven cases of atrophy of the diaphragm following section of the phrenic nerve. In all but one case the operation of choice was evulsion by the method of Felix. The duration of the paralysis varied from three weeks to six years. Atrophy of the diaphragm was evident as early as the third week after section of the phrenic nerve and was complete by the fourth month. After paralysis, one half of the diaphragm was elevated and eventrated into the thorax. With stretching it became a thin whitish membrane of parchment-like thinness. Histologically the atrophy of the paralyzed half of the diaphragm was seen to be complete and uniform. In one case a few normal muscle bundles were seen in one area, scattered among atrophic fibers. This probably represented an accessory nerve supply rather than actual regeneration. In view of the marked distortion of the abdominal viscera in ten of the cases, in three of which there was a fatal gastroduodenal obstruction, the author points out that the possibility of such complications must be considered when advising phrenicectomy for the treatment of pulmonary disease.

Shifting Electrical Axis of the Heart in Artificial Pneumothorax.—Treiger and Lundy studied the shifting of the electrical axis of the heart, measured by Einthoven's "triangle" in correlation with roentgen observations on the positional changes of the heart in thirty-one cases, seventeen presenting left and fourteen right pneumothorax. They observed that artificial pneumothorax, without adhesions or fluid, whether left or right, shifts the electrical axis to the right. The heart is displaced to the right by left pneumothorax and to the left by right pneumothorax. This displacement may be independent of the shifting of the electrical axis. The degree of shifting of the electrical axis in pneumothorax is in direct proportion to the quality of the pneumothorax. The average shifting of the axis to the right is greater in left than in right pneumothorax. Adhesions in pneumothorax may prevent the usual shifting of the electrical axis to the right, in whole or in part, and may be associated with shifting of the electrical axis to the left. The degree of shifting of the axis in pneumothorax with adhesions is influenced by the location, quantity and quality of adhesions as well as by the quality of pneumothorax. Adhesions usually prevent the production of a complete and excellent pneumothorax and are associated with a partial pneumothorax of a lower grade, thus diminishing or eliminating the factor of pneumothorax. Fluid in pneumothorax, similar to adhesions, frequently is associated with shifting of the electrical axis to the left. This may be due to the presence of adhesions. However, it was seen that fluid without demonstrated adhesions also was associated with shifting of the axis to the left. Fluid in pneumothorax, similar to adhesions, influences the quality of pneumothorax and frequently changes it from a complete and excellent pneumothorax into one of partial and of lower grade. Adhesions develop frequently, especially after a partial absorption of fluid, and their action may overshadow the two other factors —pneumothorax and fluid.

Annals of Medical History, New York

6: 193-290 (May) 1934

History of Medical Costume: Notes. W. J. Bishop, London, England.—p. 193.
Another Glimpse of Medicine in the Seventeenth Century: Beughem's Bibliography. L. Thorndike, New York.—p. 219.
Early Editions of Osler's Textbook of Medicine. H. E. MacDermot, Montreal.—p. 224.
Thomas Holley Chivers, M.D.: The Wild Mazeppa of Letters. R. L. Pitfield, Philadelphia.—p. 241.
Physical Diagnosis from the Time of Roentgen. W. E. Robertson, Philadelphia.—p. 255.
Ancient Dentistry in the Old and New World. B. W. Weinberger, New York.—p. 264.
Ancient Therapy in Persia and in England: Being Extracts from "Therapeutics of Joseph," Herat, 1511 A. D., and from John Wesley's "Primitive Physick," London, 1772. H. A. Lichtwardt, Meshed, Persia.—p. 280.

Archives of Internal Medicine, Chicago

53: 633-808 (May) 1934

Etiology and Symptoms of Neurocirculatory Asthenia: Analysis of One Hundred Cases, with Comments on Prognosis and Treatment. H. R. Craig and P. D. White, Boston.—p. 633.
Experimental Postoperative Edema. C. M. Jones, Frances B. Eaton and J. C. White, Boston.—p. 649.
Gastro-Intestinal Studies: III. Determinations of Enzymes on Autopsy from Cases of Pernicious Anemia and Pellagra. O. M. Helmer, P. J. Fouts and L. G. Zerfas, Indianapolis.—p. 675.
Origin and Significance of Tyrosinuria in Disease of Liver. S. S. Lichtman, New York.—p. 680.
Effect of Toxemia on Tolerance for Dextrose and on Action of Insulin. J. Shirley Sweeney, N. Barshop and L. C. LoBello, Dallas, Texas.—p. 689.
Salmonella Suipestifer Bacteremia with Acute Endocarditis. B. A. Gouley and S. L. Israel, Philadelphia.—p. 699.
*Metabolic Exercise Tolerance Test: Simplified Method. S. Soskin, L. N. Katz, P. Markle and R. Henner, Chicago.—p. 706.
Metabolic Exercise Tolerance Test for Patients with Cardiac Disease: Feasible Method for Using Excess Oxygen Consumption and Recovery Time of Exercise as Criteria of Cardiac Status. L. N. Katz, S. Soskin, W. J. Schutz, W. Ackerman and J. L. Plaut, Chicago.—p. 710.
Congestive Heart Failure: XIX. Reflex Stimulation of Respiration as Cause of Evening Dyspnea. W. G. Harrison Jr., J. A. Calhoun, J. P. Marsh and T. R. Harrison, Nashville, Tenn.—p. 724.
Nature and Significance of Heart Sounds and of Apex Impulses in Bundle-Branch Block. J. K. Lewis, San Francisco.—p. 741.
Blood Cholesterol and Thyroid Disease: III. Myxedema and Hypercholesteremia. L. M. Hurxthal, Boston.—p. 762.
Cerebrospinal Fluid Pressure and Venous Pressure in Cardiac Failure and Effect of Spinal Drainage in Treatment of Cardiac Decompensation. W. G. Harrison Jr., Atlanta, Ga.—p. 782.
*Heredity in Arteriolar (Essential) Hypertension: Clinical Study of Blood Pressure of One Thousand Five Hundred and Twenty-Four Members of Two Hundred and Seventy-Seven Families. D. Ayman, Boston.—p. 792.

Metabolic Exercise Tolerance Test.—Soskin and his associates outline the following method for determining the excess oxygen consumption during exercise and the time required for recovery by the metabolic exercise tolerance test: The spirometer is filled with oxygen from the first tank and, if desired, the oxygen consumption during rest is determined or a basal metabolism test may be performed in the usual manner. When this is completed the clockwork drum is stopped and the spirometer is refilled from the first tank. By means of a fine needle valve oxygen is introduced into the spirometer from the second tank, through the flowmeter at such a rate that the writing point continues to superimpose its record at the same constant expiratory level. The clockwork drum is now restarted and the record is observed for several minutes to ensure the existence of an exact balance between the oxygen consumed by the resting patient and the oxygen introduced from the second tank. Once this exact balance has been established, the adjustment of the needle valve is left unchanged for the duration of the test. Reading of the flowmeter offers an additional visual check on the constancy of the supply of oxygen at all times. With the oxygen flowing into the spirometer at a rate equal to the oxygen consumption during rest, the exercise of lifting two 2,625 Gm. weights through a distance of 37.5 cm. at a rate of twenty times a minute for two minutes is performed and the observations are continued until a new constant expiratory level is recorded. The difference in height between the constant horizontal levels, before and after exercise, represents the excess oxygen consumption during the exercise. The time elapsing from the end of the exercise

to the point at which the final horizontal level is first established represents the time required for recovery. The difference between the horizontal lines may be read directly from the ruled paper in millimeters and converted to cubic centimeters of oxygen by multiplying by the conversion factors 20.73. The volume of gas is corrected to standard temperature and pressure in the usual manner.

Heredity in Arteriolar Hypertension.—Ayman made a study of the blood pressure, height and weight of 1,524 members of 277 families. Of 780 members, aged from 14 to 39 years, of the second generation of the families, elevated systolic and diastolic blood pressure readings (140 systolic and 80 diastolic, or higher) occurred in 148 subjects. These subjects had the same average age and sex incidence as the entire group of 780 children, but they were 14 3/10 pounds above the average weight compared to 4 1/2 pounds above the average weight for the normal children. The families studied were then grouped according to the presence or absence of arteriolar (essential) hypertension in one or both parents. In the families whose parents had absolutely normal blood pressures, the incidence of elevated blood pressures in the children was only 3.1 per cent. In the families in which both parents had arteriolar hypertension the incidence of elevated readings in the children reached to 45.5 per cent. Of seventy brothers and sisters of parents with normal blood pressures, 37.3 per cent had elevated blood pressure readings, whereas of eighty-six brothers and sisters of parents with arteriolar hypertension, 65.3 per cent had elevated blood pressure readings. Of eighteen families in which parts of three generations were available, the results were similar to those of the foregoing seventy brothers and sisters. The results presented show that there is an unusually high incidence of elevated blood pressure readings in the children, brothers, sisters and parents of subjects with arteriolar hypertension, as compared with similar relatives of subjects with normal blood pressure. These results are strong evidence for the existence of a hereditary factor in arteriolar (essential) hypertension.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

15: 257-320 (May) 1934

Surgical Tuberculosis: Its Treatment by Climate and Sunlight During Forty-Seven Years (1886-1933). O. Bernhard, St. Moritz, Switzerland.—p. 261.

*Transurethral Surgery: Its Indications and Limitations. J. R. Caulk, St. Louis.—p. 267.

Id.: Review of Recent Reports and Some Personal Experiences. H. C. Rolnick, Chicago.—p. 276.

Clinical and Postoperative Study of Prostatic Resections. A. E. Goldstein, Baltimore.—p. 279.

Fundamental Principles and Results of Transurethral Surgery. E. Hess, Erie, Pa.—p. 284.

Transurethral Removal of the Prostate. O. Grant, Louisville, Ky.—p. 289.

Electrosurgery: Its Application to Urinary Pathology. W. S. Pugh, New York.—p. 295.

Relative Influence of External and Body Temperatures on the Heart. S. Benson, Chicago.—p. 303.

Transurethral Surgery.—Caulk is convinced that transurethral surgery should be employed in at least 80 per cent of all vesical neck obstructions, benign and malignant, and that it could be employed in practically all obstructions but for his belief in the necessity for repeat operations. In dealing with prostates of tremendous dimensions, he does not feel justified if the subjects are good surgical risks in subjecting them to such a long course of corrective transurethral procedures, but he thinks that these glands should be removed surgically. In the poor surgical risks the aim should be to give them a maximal result with a minimal sacrifice, and this can be done only through repeated transurethral procedures over a long period. Transurethral surgery is indicated in practically all cancers of the prostate, usually in conjunction with radium or high voltage roentgen therapy, polyps or congenital bands in the urethra, contractures of the neck in women and children, as a complication of vesical tuberculosis, and to close indolent suprapubic fistulas. The punch operation of the cautery type, such as the author's, or associated with coagulation, is far superior to any of the electrical devices at present employed. He describes a modification of the cautery punch that meets the demand for a visual instrument which will remove tissue with the highest degree of safety.

Canadian Public Health Journal, Toronto

25: 205-254 (May) 1934

Development of Public Health in the Province of Quebec. By [illegible] Officer of the Provincial Bureau of Health, Quebec.—p. 205.

Cross Connections in Municipal Water Supplies in Ontario. G. A. H. Burn and E. W. Johnston, Toronto.—p. 218.

A Full Time Rural Health District. G. M. Little, Red Deer, Alta. —p. 225.

Distribution of Brucella Abortus in the Infected Udder. R. Thompson, Montreal.—p. 229.

The Organization of a Medical Service Within a Sanatorium. J. H. Holbrook and A. S. Kennedy, Hamilton, Ont.—p. 234.

Endocrinology, Los Angeles

18: 317-454 (May-June) 1934

*Calorigenic Action of Thyroid and Some of Its Active Constituents. J. Lerman and W. T. Salter, Boston.—p. 317.

Adrenal Cortical Therapy of Addison's Disease in Clinical Practice. H. Lisser, San Francisco; F. B. Taylor and N. B. Leet, Oakland, Calif.—p. 333.

Treatment of Addison's Disease with an Extract of the Adrenal Gland: Report of Case in Which Experimental Relapses and Remissions Were Brought About. M. M. Cantor and J. W. Scott, Edmonton, Alta.—p. 341.

Parathyreotropic Action of the Anterior Pituitary: Histologic Evidence in the Rabbit. S. Hertz and A. Kranes, Boston.—p. 350.

Studies of the Adrenal Glands in Health and Disease: II. Effects of an Excess of Cortical Hormone in Addison's Disease. J. Kincov and F. O. Zillessen, Easton, Pa., and L. G. Rowntree, Philadelphia.—p. 361.

*Weight Changes in the Suprarenal Glands of Albino Rats on Vitamin E Deficient and Fat Deficient Diets. C. M. Blumenfeld, Salt Lake City.—p. 367.

*Constituents in Normal Urine Producing the Hyperglycemia Previously Attributed to Prolan. B. L. Davis Jr., J. C. Hinsey and J. E. Markee, Stanford University, Calif.—p. 382.

Endocrine Dwarfism: Second Report. W. Engelbach and R. L. Schaefer, Detroit.—p. 387.

Action of the Adrenal Cortical Hormone on the Elimination of Cholesterol by the Bile. G. Marañon, J. Collazo, L. Gaetan and E. Roda, Madrid, Spain.—p. 393.

The Occurrence of Parathyroid Tissue Within the Thymus: Report of Four Cases. L. A. Brewer 3d, Ann Arbor, Mich.—p. 397.

The Influence of the Pituitary on Basal Metabolism and on Specific Dynamic Action. B. A. Houssay, Buenos Aires, Argentina.—p. 409.

Exhaustion Phenomenon in Thyroid Produced by Pituitary Treatment: Histologic Study of Rabbit's Thyroid Under Varying Degrees of Anterior Pituitary Therapy. S. Hertz and A. Kranes, Boston.—p. 415.

Periodicals on Endocrinology of Sex. W. F. Mengert, Philadelphia.—p. 421.

Calorigenic Action of Thyroid.—Lerman and Salter state that the thyroxine polypeptide of Harington and Salter offered an intermediary substance for comparing the physiologic effects of various types of thyroid substance. Daily oral administration of 0.5 mg. of iodine in this form in five cases of untreated myxedema produced approximately the same average effect as daily intravenous injections of 0.5 mg. of iodine in polypeptide form into such patients. A single curative dose of 6.5 mg. of iodine as polypeptide in two cases of myxedema showed the intravenous route somewhat more effective than the oral in this large dosage. On the other hand, intravenous polypeptide in a single large dose duplicated the effect of crystalline thyroxine given intravenously in equivalent dosage. Since the thyroxine in polypeptide is optically active and the crystalline thyroxine is racemic, it follows that neither optical activity nor peptide linkage enhances the physiologic potency of thyroxine. The effect of whole gland was tested by daily oral administration of desiccated thyroid. In three cases of untreated myxedema the dose was adjusted to 0.5 mg. of thyroxine iodine. These patients reacted more rapidly than the standard reference subjects. Four other patients received from 0.69 to 0.77 mg. daily of total iodine in the form of desiccated thyroid. The results duplicated or slightly exceeded the polypeptide control curve. The response of five patients receiving 0.42 mg. of total iodine daily in the form of desiccated thyroid was slightly less than that of the control group. Comparative studies of the maintenance dose (in terms of iodine) of six lots of commercial thyroid in twenty cases of myxedema indicated that total organic iodine rather than thyroxine iodine was important. The results indicate that all the iodine in thyroglobulin is calorigenically active. They also indicate that thyroid substance should be assayed in terms of total organic iodine rather than thyroxine iodine. The significance of total organic iodine holds quantitatively not only for whole gland but also for thyroglobulin and the smaller degradation products containing thyroxine. Assays of thyroglobulin from "toxic" glands on one patient having myxedema and thyroglobulin from "non-

toxic colloid" glands on two patients having myxedema indicated an effect that was better referred to the total organic iodine than to thyroxine iodine. Thyroxine peptone obtained by peptic digestion of human thyroglobulin gave similar results in two cases, whereas diiodotyrosine peptone, previously fed to these patients, produced no metabolic effect. Therefore the results suggest that diiodotyrosine iodine is calorigenically potent so long as it is part of the thyroglobulin molecule but loses its activity when separated from the thyroxine iodine fraction.

Weight Changes in the Suprarenals.—Blumenfeld studied the suprarenals from 176 rats to determine the effects of dietary modifications on the estimated weights of the cortex and the medulla of the suprarenals. Weights were estimated from serial sections by the paper outline method, and it was shown that sections taken at 240 micron intervals gave average results not significantly different from those with sections at 10 or 15 micron intervals. The first pregnancy in normal Wistar albino rats did not alter the weight of the cortex or the medulla. Rats deprived of vitamin E and killed during the second pregnancy had suprarenals the cortex of which was questionably hypertrophied but the medulla of which was definitely atrophied. Rats maintained on a vitamin E deficient diet and carried through a first pregnancy, then refed vitamin E and killed during a second pregnancy, had significantly enlarged suprarenals, owing entirely to cortical hypertrophy. The medulla returned to a normal weight. A fat-free diet produced in male and female albino rats a relative atrophy of the suprarenals, because of both cortical and medullary decrease. Curing the symptoms of this diet by feeding fatty acids, chiefly linoleic, did not cause a return of the suprarenal weight to normal. The weight of the medulla did increase, but the cortical weight remained practically unchanged. The differences between the cortex and the medulla of the various female groups were statistically significant; none of those in the male groups, except the subnormal weight of the medulla in the test group, were significant.

Hyperglycemia Previously Attributed to the Anterior Pituitary-Like Principle.—The experiments of Davis and his associates reveal that the hyperglycemia produced by injection of urine into rabbits is due to urinary constituents other than the anterior pituitary-like principle; that is, uric and hippuric acids and possibly other substances. It cannot be elicited in pseudopregnant rabbits or in rabbits that have received massive doses of follicular hormone. It depends on the presence of the suprarenal medulla even though it does occur when the suprarenal medulla has been deprived of its thoracolumbar sympathetic innervation.

Georgia Medical Association Journal, Atlanta

23: 163-202 (May) 1934

Chronic Prostatitis. H. Y. Righton, Savannah.—p. 163.
Urinary Tract Infections. M. L. Boyd, Atlanta.—p. 165.
Nephroptosis. S. T. Brown, Atlanta.—p. 172.
Hemnephrectomy for Pyonephrosis Involving the Left Half of a Horseshoe Kidney. S. J. Sinkoe and W. E. Upchurch, Atlanta.—p. 176.
Congenital Hydronephrosis: Report of Two Cases. J. J. Ravenel, Charleston, S. C.—p. 178.
Clinical Consideration of Movable Kidney. L. Orr, Orlando, Fla.—p. 182.
Congenital Dislocation of Lenses: Hereditary Influences. S. C. Howell, Atlanta.—p. 186.
Some Practical Points in the Diagnosis of Pulmonary Diseases. C. Holmes, Atlanta.—p. 188.
Diuretics in the Treatment of Edema and Ascites. C. Smith, Atlanta.—p. 191.

Journal of Bacteriology, Baltimore

27: 443-538 (May) 1934

Investigation of the Thermal Death Point of Saccharomyces Ellipsoideus. H. Aref and W. V. Cruess, Berkeley, Calif.—p. 443.
Bactericidal Properties of Ultraviolet Irradiated Petrolatum. H. J. Sears and N. Black, Portland, Ore.—p. 453.
Fermentation of Sorbitol and Trehalose by Hemolytic Streptococci from Various Sources. Helen Plummer, Toronto.—p. 465.
Action of Certain Bacteria on Some Simple Triglycerides and Natural Fats, as Shown by Nile Blue Sulphate. M. A. Collins and B. W. Hammer, Ames, Iowa.—p. 473.
Types of Lipolysis Brought About by Bacteria, as Shown by Nile Blue Sulphate. M. A. Collins and B. W. Hammer, Ames, Iowa.—p. 487.
Taxonomic Study of "Clostridium Putrificum" and Its Establishment as a Definite Entity: Clostridium Lentoputrescens, Nov. Spec. S. E. Hartsell and L. F. Rettger, New Haven, Conn.—p. 497.
Antiseptic Effect on Tubercle Bacilli of Certain Recently Advocated Compounds. M. L. Cohn, Denver.—p. 517.
*Differentiation of Hemolytic Streptococci of Human and Animal Origin by Group Precipitin Tests. P. R. Edwards, Lexington, Ky.—p. 527.
Hydrolysis of Sodium Hippurate by Hemolytic Streptococci: Note. P. R. Edwards and R. Broh-Kahn, Lexington, Ky.—p. 535.

Differentiation of Hemolytic Streptococci by Precipitin Tests.—According to Edwards, it was possible to differentiate hemolytic streptococci of human and animal origin by the precipitin test when acid extracts of the organism were used as antigens. Streptococcus equi, type A animal streptococci and type B animal streptococci all belong to the same serologic group. Streptococci of human origin constitute a second group. No cross reactions occurred between the two groups.

Journal of Biological Chemistry, Baltimore

105: 455-632 (June) 1934. Partial Index

Basic Amino Acids of Serum Proteins (Orosins): IV. Chemical Relationship Between Various Avian Orosins: Note on Some Proteins of the Egg. R. J. Block, New Haven, Conn.—p. 455.
The Antineuritic Vitamin: V. Preparation of a Vitamin Concentrate Suitable for Parenteral Use. E. H. Stuart, R. J. Block and G. R. Cowgill, New Haven, Conn.—p. 463.
Improved Method for the Isolation of Crystalline Stercobilin. C. J. Watson, Minneapolis.—p. 469.
Synthesis of the *p*-Aminophenol β-Glycosides of Maltose, Lactose, Cellobiose and Gentiobiose. F. H. Babers and W. F. Goebel, New York.—p. 473.
Oxidation of Sulphur of Homocystine, Methionine and S-Methylcysteine in the Animal Body. V. du Vigneaud, H. S. Loring and H. A. Craft, Washington, D. C.—p. 481.
Nature and Amount of Nondiffusible Calcium in Protein Sols: Remarks on the Paper by Eversole, Ford and Thomas. D. M. Greenberg, Berkeley, Calif.—p. 511.
Nature and Amount of Nondiffusible Calcium in Protein Sols: A Reply. W. G. Eversole, Iowa City.—p. 515.
Carotene: VIII. Separation of Carotenes by Adsorption. H. H. Strain, Stanford University Calif.—p. 523.
Effect of Proportions of Fat and Carbohydrate in the Diet on Excretion of Metabolic Nitrogen in the Feces. H. H. Mitchell, Urbana, Ill.—p. 537.
Studies of Gas and Electrolyte Equilibria in Blood: XVIII. Solubility and Physical State of Atmospheric Nitrogen in Blood Cells and Plasma. D. D. Van Slyke, R. T. Dillon and R. Margaria, New York.—p. 571.
Id.: XIX. Solubility and Physical State of Uncombined Oxygen in Blood. J. Sendroy Jr., R. T. Dillon and D. D. Van Slyke, with technical assistance of D. Kertesz, New York.—p. 597.

Journal of Immunology, Baltimore

26: 353-436 (May) 1934

Transmission of Diphtheria Antitoxin from Hen to Egg. T. H. Jukes, D. T. Fraser and M. D. Orr, Toronto.—p. 353.
Use of Immune Serum at Various Intervals After the Inoculation of Yellow Fever Virus into Rhesus Monkeys. N. C. Davis, Bahia, Brazil.—p. 361.
Protective Properties Against Yellow Fever Virus in the Serum of the Offspring of Immune Rhesus Monkeys. M. Hoskins, Bahia, Brazil.—p. 391.
*Rôle of Leukocytes in Immunity to Herpes. A. Jamuni and Margaret Holden, New York.—p. 395.
*Cataphoresis as a Control of Specificity of Streptococcic Vaccines: Influenzal Streptococcus Vaccine in the Prevention and Treatment of Infections of the Respiratory Tract. E. C. Rosenow, Rochester, Minn.—p. 401.
Failure to Find Individual Blood Differences in Guinea-Pigs or in Mice. W. C. Boyd and Elisabeth W. Walker, Boston.—p. 435.

Leukocytes in Immunity to Herpes.—The experiments of Jamuni and Holden, on rabbits, suggest that leukocytes have a definite tropinizing function in destroying herpes virus in the presence of immune serum. Both normal and immune cells aided in the inactivation of the virus in the presence of immune serum when the latter alone was present in an amount insufficient to neutralize the virus. At times results almost equally good were obtained with immune cells in the presence of normal serum, which suggests that leukocytes, or possibly tissue cells, may be even more important than the serum antibodies in active herpes immunity. Mononuclear cells are more efficacious than polymorphonuclear cells in the disposal of herpes virus. The authors believe that the enhancing action is due to phagocytosis of the opsonized virus, although this statement cannot be verified, lacking demonstration of whatever morphologic unit constitutes the virus. Their experiments indicate that immune or normal phagocytic cells bring about a greater virucidal effect than can be obtained with immune serum alone.

Cataphoresis in Prevention and Treatment of Infections of the Respiratory Tract.—According to the obser-

vations of Rosenow, vaccines prepared from strains of streptococci isolated in studies of influenza and preserved in glycerin salt solution suspensions have been shown to be harmless and to have well marked antigenic, preventive and curative powers against the common cold, influenza and other acute and chronic streptococcic infections of the respiratory tract. These results are in accord with those obtained in prophylactic inoculations against pneumonia during the pandemic of influenza of 1918 to 1920. Cataphoresis has been found useful in controlling the specificity of the streptococcus as found in various infections of the respiratory tract and as incorporated in vaccines. Experimental basis for the commonly observed early good effects from the use of the vaccine in treatment is afforded by the markedly increased destruction of streptococci in the peritoneal cavity of mice, due, it would seem, to altered cellular response or "immunity" induced by intraperitoneal or subcutaneous injection of the vaccine twenty-four hours before.

Journal of Infectious Diseases, Chicago

54: 281-408 (May-June) 1934

Relapsing Fever in California: III. Carrier Condition; Epidemiology. G. E. Coleman, San Francisco.—p. 281.
Id.: IV. Cross Immunity; Susceptibility of Sierra Golden Mantle Ground Squirrels. G. E. Coleman, San Francisco.—p. 295.
Undulant Fever in New York State. Ruth Gilbert and Marion B. Coleman, Albany, N. Y.—p. 305.
Mutations as Governing Bacterial Characters and Serologic Reactions. F. d'Herelle and T. L. Rakieten, New Haven, Conn.—p. 313.
*Occurrence and Persistence of Type Specific Agglutinins and Protective Antibodies in the Serum of Rabbits Following the Inhalation of Living Pneumococci (Types I and II). E. G. Stillman, New York.—p. 339.
Classification of Brucella. A. Thomsen, Copenhagen, Denmark.—p. 345.
Acid-Fast Organism from Leprous Lesions: Cultivation in Tissue Cultures and Other Mediums. A. J. Salle, Berkeley, Calif.—p. 347.
Unsuccessful Attempt to Demonstrate Filtrable Forms of Bacteria with K Medium. O. R. Kelley, Denver.—p. 360.
Tests for Cross Immunity Between the Virus of Borna Disease and That of Equine Encephalomyelitis. Beatrice F. Howitt and K. F. Meyer, San Francisco.—p. 364.
Immunization of Guinea-Pigs to the Virus of Equine Encephalomyelitis. Beatrice F. Howitt, San Francisco.—p. 368.
Experimental Studies of Postmortem Bacterial Invasion in Animals. C. G. Burn, New Haven, Conn.—p. 388.
Postmortem Bacteriology. C. G. Burn, New Haven, Conn.—p. 395.

Specific Agglutinins in Serum Following Inhalation of Pneumococci.—Stillman states that, when rabbits are repeatedly exposed to a spray containing type I pneumococci, type specific antibodies appear in the blood. In the experiments that he reports, agglutinins could be demonstrated in the serums for only a short period after the course of exposures was terminated. Protective antibodies, however, persisted for long periods, even for several years. When rabbits were repeatedly exposed to a spray containing virulent type II pneumococci, protective antibodies could be demonstrated in the serums for only relatively short periods of time, while agglutinins were only occasionally found to be present. When rabbits are repeatedly allowed to inhale cultures of rabbit-virulent type III pneumococci, type specific immune bodies do not appear in the blood. The immunity reaction exhibited by rabbits which have repeatedly inhaled a spray containing live pneumococci differs in different animals, depending to a considerable extent on the type of pneumococcus employed in the experiment.

Journal of Nervous and Mental Disease, New York

79: 497-620 (May) 1934

Enlarging Responsibilities for the Physician. W. A. White, Washington, D. C.—p. 497.
Psychiatric Study of Hyperthyroid Patients. Agnes Conrad, New York.—p. 505.
Spongioblastoma Multiforme of the Spinal Cord: Case Report. A. W. Bryan, Madison, Wis.—p. 530.
*Justifiable Addiction and Nerve Block. P. M. Lichtenstein and M. B. Greene, New York.—p. 534.
Mental Disorders Related to Childbirth. G. Frumkes, New York.—p. 540.

Justifiable Addiction and Nerve Block.—Lichtenstein and Greene are of the opinion that nerve block holds great promise as a substitute for agencies employed to allay unusual sensory disturbances because it gives relief in painful conditions. In certain diseases, it is certainly an aid in effecting a cure. Nerve block suggests a means of treating diseases of narcotic addiction. The authors are engaged in a series of experiments which, they hope, will finally solve the problem of scientific treatment of addiction. They have cured people who became addicted because of certain painful conditions. They have followed some such cases for several years and are satisfied that these people have no desire for narcotics and are permanently cured of addiction.

Kansas Medical Society Journal, Topeka

35: 201-240 (June) 1934

The Psychoses Associated with Pregnancy. B. C. Smith, Topeka.—p. 203.
Lymphogranuloma Inguinale. T. B. Hall and P. F. Stookey, Kansas City, Mo.—p. 209.
Rheumatic Heart Disease. A. M. Ginsberg, Kansas City, Mo.—p. 212.

Kentucky Medical Journal, Bowling Green

32: 275-332 (June) 1934

Bulbar Form of Poliomyelitis: Report of Case. J. W. Bruce, Louisville.—p. 280.
Leprosy in Kentucky. L. H. South, Louisville.—p. 283.
Adynamic Ileus in Abdominal Surgery. E. W. Jackson, Paducah.—p. 284.
Vitamins: Discussion of Our Knowledge to the Present Time. V. E. Simpson, Louisville.—p. 290.
The Hazard of Trying to Forget. W. E. Gardner, Louisville.—p. 299.
Glimpse of Primitive Medical Men and Early Medicine. A. H. Barkley, Lexington.—p. 306.
Intravenous Urography. J. N. Townsend and O. Grant, Louisville.—p. 309.
The Thyroid Gland: The Study of the Eyes in Goiter. A. O. Pfingst, Louisville.—p. 313.
Id.: Ten Minutes of Thyroid Endocrinology. R. A. Bate, Louisville.—p. 315.
Id.: Surgical Considerations of the Thyroid. W. O. Johnson, Louisville.—p. 319.
Medical Melange. O. P. Nuckols, Pineville.—p. 324.

Maine Medical Journal, Portland

25: 85-116 (May) 1934

Massage and Mobilization in Treatment of Recent Injury. S. H. Kagan, Augusta.—p. 101.
Dermoid Cyst of the Floor of the Mouth: Report of Case. H. P. Johnson, Portland.—p. 104.
The Tonsil Problem. F. W. Hanlon, Brunswick.—p. 106.

Medicine, Baltimore

13: 123-250 (May) 1934

Vitamins and Resistance to Infection. Elizabeth Chant Robertson, Toronto.—p. 123.
Potential Energies of Oxidation-Reduction Systems and Their Biochemical Significance. W. M. Clark, Baltimore.—p. 207.

Military Surgeon, Washington, D. C.

74: 225-280 (May) 1934

Gwathmey's Oil-Ether Colonic Anesthesia. J. F. Gallagher.—p. 225.
Notes on Recent Literature of the Eye, Ear, Nose and Throat. C. J. Brown.—p. 234.
*Tularemia Treated by Neoarsphenamine: Case History. B. L. Shellhorn and C. Beckwith.—p. 239.
Diagnosis and Treatment of Acute Abdominal Conditions Commonly Found in CCC Camps. D. M. Fuiks.—p. 242.
Carbon Tetrachloride Poisoning in Ascariasis: Case Report. G. E. Horrocks.—p. 246.

History of Tularemia Treated by Neoarsphenamine.—Shellhorn and Beckwith say that blood taken early in their case of tularemia treated with neoarsphenamine did not show Bacterium tularense. Six injections of 0.45 Gm. doses were administered. The initial lesions began to improve noticeably within three days after the first injection. The right axillary gland ceased draining within twenty-four hours after the administration of neoarsphenamine, at the second admission. The infection was caused by the bite of a squirrel. Infection with tularemia from the bite of an animal is most unusual. Members of the Forestry Service state that no other case of tularemia has come to their attention.

Nebraska State Medical Journal, Lincoln

19: 201-240 (June) 1934

The New Order: Our Medical Utopia. J. Bixby, Geneva.—p. 201.
Congenital Heart Disease: Report of Three Cases. G. W. Covey and J. M. Neely, Lincoln.—p. 204.
Fixation Position for Optimal Joint Function. R. D. Schrock, Omaha.—p. 211.
Treatment of Some Common Organic Neurologic Syndromes. A. E. Bennett, Omaha.—p. 215.
Unusual Goiters. M. Emmert, Omaha.—p. 219.
Pulmonary Abscess. J. Weinberg, Omaha.—p. 222.
May Psychic Stimuli Produce Hay Fever? O. C. Nickum, Omaha.—p. 224.
Cholecystitis Due to Brucella Melitensis. E. L. MacQuiddy and J. W. Martin, Omaha.—p. 227.

New England Journal of Medicine, Boston

210: 1043-1094 (May 17) 1934

Compression Fractures of Vertebral Bodies. J. P. Bowler and J. P. Gile, Hanover, N. H.—p. 1052.
Necessary Requirements in a Minimal Diet for Infants and Children. J. L. Morse, Boston.—p. 1057.
*Use of Ergotamine Tartrate in Migraine. W. G. Lennox, Boston.—p. 1061.
*Parenteral Administration of Paraldehyde for the Control of Pain and Convulsive States. A. S. Johnson, Springfield, Mass.—p. 1065.
Foreign Protein Sensitization with Meningeal Involvement Due to the Use of Vaccine. W. E. Hall and T. P. Murdock, Meriden, Conn.—p. 1067.
Recurrent Dislocation of the Shoulder. F. J. Cotton and G. M. Morrison, Boston.—p. 1070.

210: 1095-1144 (May 24) 1934

Notes on Giant Cell Tumors of Bone and Cysts. F. J. Cotton, Boston.—p. 1095.
Cancer of the Mouth in Women. G. W. Taylor, Boston.—p. 1102.
Diaphragmatic Hernia: Medical and Surgical Treatment. S. A. Wilkinson, Boston.—p. 1105.
Chronic Arthritis and Its Treatment. H. A. Nissen, Boston.—p. 1109.
Treatment of Constipation. A. G. Brailey, Boston.—p. 1116.
Treatment of Leprosy: Notes. C. E. Bousfield, Chaoyang, via Swatow, China.—p. 1118.
The Family Doctor. O. A. Moser, Rocky Hill, Conn.—p. 1120.

Use of Ergotamine Tartrate in Migraine.—Lennox administered ergotamine tartrate by intravenous or subcutaneous injection to forty-five patients who gave a history of migraine, while they were having a headache. Abrupt termination of the initial attack treated occurred in forty patients. Eight of the patients had had frequent, incapacitating headaches for many years, had not found relief by other drugs or treatment and have used ergotamine tartrate for six months or longer. Seven of these have had almost uniform relief for individual attacks. Of these seven, four are having attacks at more frequent and three at less frequent intervals than before medication was started. The recommended single dose is 0.5 mg. subcutaneously or 1 mg. orally. Because patients vary in their reaction to the drug, it is wise to give but half the full subcutaneous dose at the first trial. If this is well borne but not effective, the full dose can then be given. The dosage can be repeated after an interval of from two to three hours. For a prompt sustained effect, the author prefers to give 0.5 cc. (0.25 mg.) intravenously and, at the same time, the same amount subcutaneously. The dose should be varied in order to find the least amount that is effective. It is presumably more effective if given early in the attack.

Paraldehyde for Control of Pain and Convulsive States.—Johnson found the intramuscular use of paraldehyde beneficial in various maniacal and convulsive cases in which morphine failed to give relief. He considers 8 cc. an average dose for an adult weighing about 140 pounds (63.6 Kg.). The injection should be given deeply into the gluteus medius to avoid sloughing. In the hope of avoiding the pain of intramuscular injection, the intravenous route has been employed in a few cases. A patient suffering terrific pain from a coronary thrombosis was given 5 cc. of undiluted paraldehyde into the vein at the rate of about 1 cc. in three seconds. The patient lost consciousness in about ten seconds. Coincident with the onset of anesthesia there was a slight amount of pharyngeal irritation accompanied by coughing and a strong smell of paraldehyde on the breath. After a few coughs the patient appeared completely relaxed and slept quietly for about an hour. On awakening the pain was much less severe and could be controlled adequately with morphine. Intravenous paraldehyde in doses of from 7 to 10 cc. has been used to control the restlessness and headache of a hypertensive patient with evidence of extensive cerebrovascular pathologic symptoms. This patient was violently nauseated by morphine and was unable to retain the barbituric acid derivatives by mouth or rectum. Quiet sleep was induced on each of six successive nights by the intravenous administration of 7 cc. of paraldehyde. The sleep would last several hours but could be greatly prolonged by the rectal injection of from 5 to 10 grains (0.32 to 0.65 Gm.) of sodium amytal, which was retained if given after consciousness had been lost. This patient began to show some degree of tolerance to paraldehyde after two or three injections. Tolerance to paraldehyde unquestionably develops and habit formation has been reported, but these should not be problems if the drug is used only occasionally to control severe pain or convulsive states requiring rapid anesthesia. Although unpleasant it requires no sterilizing and has a wide margin of safety, while being almost instantaneous in action when administered parenterally.

New Orleans Medical and Surgical Journal

86: 775-854 (June) 1934

The Failing Heart of Middle Life. J. E. Knighton, Shreveport, La.—p. 783.
Endemic Dysenteric Infections in Louisiana. D. N. Silverman, New Orleans.—p. 786.
Treatment of Cardiovascular Syphilis. J. H. Musser, New Orleans.—p. 789.
Treatment of Neurosyphilis. F. L. Fenno, New Orleans.—p. 793.
Treatment of Congenital Syphilis. C. O. Lorio, Baton Rouge, La.—p. 795.
The Proved Value of a State Neuropsychiatric Clinic Free to the Public. C. Pierson and T. H. Pargen, Pineville, La.—p. 800.
Spontaneous Subarachnoid Hemorrhage. D. H. Duncan and W. R. Mathews, Shreveport, La.—p. 804.

Tennessee State Medical Assn. Journal, Nashville

27: 139-186 (May) 1934

Relationships in Medical Practice. H. B. Everett, Memphis.—p. 139.
Comparison of the Existing Relationship Between the Medical Profession and the State Health Department in Tennessee and Other Southern States. J. O. Manier, Nashville.—p. 142.
Cancer of the Uterus and the Cervix: Is It Curable? L. E. Burch, Nashville.—p. 152.
Congenital Malformations of the Esophagus: Report of Case. Beulah M. Kittrell, Knoxville.—p. 155.
Professor Elschnig's Surgical Clinic in Memphis: Follow-Up Report on Operated Cases. P. M. Lewis, R. O. Rychener and M. B. Seligstein, Memphis.—p. 157.
Some Causes of Professional Unrest. R. G. Leland, Chicago.—p. 160.
Chronic Leg Ulcers. W. T. Satterfield, Memphis.—p. 164.

West Virginia Medical Journal, Charleston

30: 193-240 (May) 1934

Primary Hypochromic Anemia (Hypoferrism) III: Comparison of Certain Compounds of Iron (Including Ferrous Glutamate and Ferrous Chloride) in the Treatment of Hypochromic Anemia. W. Dameshek, Boston.—p. 193.
Scarlet Fever. T. M. Barber, Charleston.—p. 209.
*Scarlet Fever Immunization with a Scarlet Fever Toxoid. G. Daniel, Walton.—p. 212.
Nasal Obstruction. W. C. Thomas, Huntington.—p. 214.
An Appeal for Better Sanitation. A. J. Kemper, Lost Creek.—p. 218.
The Relationship Between the Practicing Physician and the Health Department. J. P. Franklin, Cumberland, Md.—p. 222.
Mercer County Health Activities. D. B. Lepper, Bluefield.—p. 225.
Estrin Reactions in Husbands of Pregnant Women. R. I. Frame, Sharples.—p. 228.

Immunization with Scarlet Fever Toxoid.—For active immunization, Daniel found that a total of 1.6 cc. of the scarlet fever toxoid prepared by Veldee, divided into 0.1, 0.5 and 1 cc. of the toxoid at intervals of three weeks, gave maximal immunization with minimal reaction. The same amount divided into two monthly doses gave rather marked reactions. In twenty-eight children less than 6 years of age there were no noticeable systemic reactions; locally there was a slight erythema but practically no induration. In the school group of 191 children, almost all had a reddened area from 1½ to 2 inches in diameter. In some of the cases there was a painful induration, but in all cases smaller than the reddened area. The color in the erythematous areas was a deep red. There were only five systemic reactions; these consisted mainly of headache, fever, nausea and slight sore throat. In ten of the adult group of thirty-six cases rather marked reactions developed, the reaction being in direct proportion to age. In general the average reaction was less than that for typhoid immunization, and, except for more local reaction, comparable to similar protection for diphtheria.

Wisconsin Medical Journal, Madison

33: 393-468 (June) 1934

Headaches of Toxic and Metabolic Origin. A. J. Patek, Milwaukee.—p. 403.
Some Clinical, Pathologic and Therapeutic Aspects of Cancer of the Breast. M. Cutler, Chicago.—p. 405.
Roentgen Therapy in Giant Cell Tumors. B. W. Johnson, Fond du Lac.—p. 411.
Urinary Tract Infections and Urinary Antiseptics: Special Article. G. H. Ewell, Madison.—p. 415.
Headaches of Ocular and Nasal Origin. W. E. Grove, Milwaukee.—p. 418.
Treatment of Carcinoma of the Uterus. J. Tasche Jr., Sheboygan.—p. 420.
Generalized Edema After Surgery: Case Report. O. O. Meyer, Madison.—p. 427.
One Case—Or Many? Study of Tuberculosis Contacts in a Home and Rural School. R. H. Stiehm, Madison.—p. 431.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 881-930 (May 19) 1934

Cancer, with Especial Reference to Early Diagnosis. R. Ward.—p. 881.
Comparative Aspects of Louping Ill in Sheep and Poliomyelitis of Man. W. S. Gordon.—p. 885.
*Urinary Excretion of Estrin Administered Under Experimental Conditions and After the Menopause. J. M. Robson, T. N. MacGregor, R. E. Illingworth and N. Steere.—p. 888.
Criticism of Antenatal Work. A. J. Wrigley.—p. 891.

Excretion of Estrin.—The experiments of Robson and his associates demonstrate that when ketohydroxyestrin is injected intramuscularly into the ovariectomized human female or subsequent to the menopause only a small proportion of the hormone can be recovered in an active form from the urine by the methods used. The result is confirmed by experiments in which urine was injected into ovariectomized mice without any previous treatment; for, although the toxicity of the urine rendered an accurate assay impossible, yet it could be definitely established that the quantities were comparatively small. The results indicate that the human body can rapidly destroy, or at any rate render inactive, the estrous hormone, and this view is supported by the finding that, four hours after the injection of 10,000 mouse units, the blood contained less than 25 mouse units of the hormone per liter.

East African Medical Journal, Nairobi

11: 39-72 (May) 1934

Typhus Fever in Uganda. R. S. F. Hennessey.—p. 42.

Edinburgh Medical Journal

41: 293-340 (May) 1934

The Control of Diphtheria: Plea for Active Immunization of the Preschool Child. W. T. Benson.—p. 293.
Some Problems in the Growth and Developmental Mechanics of Bone. J. C. Brash.—p. 305.
*Primary Cancer of the Lung: Its Incidence and Pathology. R. M. Hill.—p. 320.

Primary Cancer of the Lung.—Hill analyzed most of the series of cases of primary cancer of the lung reported in the literature and found that pulmonary carcinoma forms about 1 per cent of all cases at necropsy and more than 8 per cent of all malignant diseases discovered after death. The increase in the incidence during recent years is probably largely relative. The disease occurs most commonly in the fifth and sixth decades of life, the average age being 51 years. The sexes are affected in the proportion of 77.87 per cent for men and 22.13 per cent for women. The etiology is not established clearly. The lungs are affected with almost equal frequency. There is no marked predilection for individual lobes. Bronchiectasis is a frequent sequel of carcinoma, and pleural effusion occurs in a third of the cases. Tumors composed largely of cells having a lesser degree of differentiation are slightly more common than the clearly defined carcinomas. The distribution of metastases is characterized by the frequency with which the suprarenals (15 per cent), kidneys (14 per cent) and brain (more than 10 per cent) are affected. The presence of cancer of the lung is often masked by bronchiectasis or pleural effusion. Emaciation is unusual. In a definite proportion of cases (about 15 per cent) there are no symptoms referable to the respiratory system. The period of survival is about six months, though the course may last several years.

Glasgow Medical Journal

3: 173-204 (May) 1934

Medical Education. G. H. Edington.—p. 173.
*Sodium Citrate as a Hemostatic. J. B. Hutchison.—p. 180.

Sodium Citrate as a Hemostatic.—Hutchison observed three patients in whom postoperative oozing of blood continued in spite of the administration of the usual hemostatics. In each of the cases, bleeding ceased immediately following the intramuscular injection of 30 cc. of a 30 per cent solution of sodium citrate. The effect of sodium citrate seems to be transitory. Its effect is noticed within a few minutes and is most marked in forty-five minutes, when the coagulation time is found to have diminished from the normal, seven or ten minutes, to about two minutes. It remains at this level for two or three hours and gradually returns to its original time. The pain of the injection can be greatly reduced by the previous injection of 4 cc. of 1 per cent solution of procaine hydrochloride into each buttock. It has a marked effect in jaundice cases, and when administered preoperatively greatly reduces hemorrhage both during and after the operation. The drug has no toxic action on the kidneys, but it destroys the platelets and thus frees substances that activate coagulation. Its use is contraindicated in diseases of the blood associated with destruction of platelets. Oral administration is slow and the effects are variable; subcutaneous injection causes pain and edema, while the intravenous route may give rise to severe shock if injection is too rapid.

Irish Journal of Medical Science, Dublin

No. **100:** 145-192 (April) 1934

The Present Position of Agglutination Tests in the Diagnosis of Enteric Infections. W. D. O'Kelly.—p. 145.
Serodiagnosis in Enteric Fever by Method of Qualitative Receptor Analysis. W. P. O'Callaghan.—p. 150.
Treatment of Fluid in the Pleural Cavity. E. T. Freeman.—p. 159.
Investigation of Sweat in Rheumatic Subjects. Eileen A. Boyd.—p. 164.
The Purification of Ether. W. R. Fearon.—p. 177.
Agranulocytosis: Case Report with Comment. M. S. Honan.—p. 182.

Journal of Physiology London

81: 147-282 (May 21) 1934

*Modifications in the Use of the Glass Electrode for the Determination of the Hydrogen Ion Concentration of Venous Blood. I. Harris, E. L. Rubin and W. J. Shutt.—p. 147.
Action of Insulin on the Respiratory Quotient, Oxygen Utilization, Carbon Dioxide Production and Sugar Utilization in the Mammalian Diabetic Heart. E. W. H. Cruickshank and C. W. Startup.—p. 153.
Micromethod for the Determination of Base by Electrodialysis. G. S. Adair and A. B. Keys.—p. 162.
Method for Determining in Animals the Alimentary Absorption Time for Water, the Abdomen Remaining Intact. F. H. Smirk.—p. 167.
Pituitary Gland in Relation to Polyuria and to Water Diuresis. W. H. Newton and F. H. Smirk.—p. 172.
Autolysis of Placental Glycogen. Anna Davy and A. St. G. Huggett.—p. 183.
Reflexes in the Triceps Extensor Preparation of the Forelimb. F. R. Miller.—p. 194.
Effects of Hypothalamic Stimulation on Gastric Motility. J. Beattie and D. Sheehan.—p. 218.
Conduction in the Cervical Sympathetic. G. L. Brown.—p. 228.
Repetition of Certain Experiments on Which Molitor and Pick Base Their Water-Center Hypothesis, and Effect of Afferent Nerve Stimuli on Water Diuresis. G. W. Theobald.—p. 243.
Energy Expenditure in Walking and Running. M. Ogasawara.—p. 255.
A Device for Estimating Blood Pressure in the Rabbit. R. T. Grant and P. Rothschild.—p. 265.
Resistance of Arterial Walls and Its Effect on Blood Pressure Readings. I. Harris.—p. 270.
Reciprocal Activity of the Cornua and Cervix Uteri of the Goat. W. H. Newton.—p. 277.

Hydrogen Ion Concentration of Venous Blood.—In determining the hydrogen ion concentration of whole blood without the addition of oxalate and fluoride, Harris and his associates have the room heated to 38 C. and maintained at that temperature for one and one-half hours before use. At the end of this time the whole electrode system has attained blood temperature. The subject then enters the room and remains seated for five minutes before blood is withdrawn into a modified glass electrode of the Kerridge type. A reading is taken within two minutes of the blood leaving the vein, but not before equilibrium has been established. The authors believe that this method of temperature control and the avoidance of the loss of carbon dioxide is an advance on methods used heretofore in that the addition of oxalate and fluoride to the blood has been avoided. It is the only method which in their hands has yielded reliable results in a large series of cases. The results obtained from normal subjects come within the range of generally accepted normal values. In their cases, under normal resting conditions, the lowest p_H recorded was 7.27 and the highest 7.43, with an average of p_H 7.36. They did not observe an acid change in any of their cases which corresponded to that described by Havard and Kerridge. This is in agreement with the observations of Platt and Dickinson, who believe that this so-called acid change was due to faulty temperature control.

Journal of Tropical Medicine and Hygiene, London

37: 113-128 (April 16) 1934

Direct and Cyclic Transmission of Trypanosoma Rhodesiense Through Guinea-Pigs: Comparison of the Reaction to Normal Human Serum. J. F. Corson.—p. 113.
Studies on Ascariasis: II. Endemiology. R. Girges.—p. 114.
British Solomon Islands Health Surveys, 1933. S. M. Lambert.—p. 119.

Lancet, London

1: 1043-1100 (May 19) 1934

Machaon, or the Future of Surgery. G. Keynes.—p. 1043.
The Hormones and Their Chemical Relations. E. C. Dodds.—p. 1048.
Clinical Investigation of Staphylococcic Toxin, Toxoid and Antitoxin. H. J. Parish, R. A. Q. O'Meara and Winifred H. M. Clark.—p. 1054.
*Anaerobic Meningitis Following Mumps: Case. T. L. McEwan and L. N. Jackson.—p. 1058.
Copper Strips for Splitting Plasters and a Plaster Opening Tool. E. I. Lloyd.—p. 1059.

Anaerobic Meningitis Following Mumps.—McEwan and Jackson present a case of anaerobic meningitis following mumps in which the isolated fusiform bacillus appeared to resemble the third type of Ghon, Mucha and Müller, and also the type II of Smith, although it showed no tendency to develop spiral forms on culture or darkground illumination as found by Smith and Tunnicliff in type II. Pathogenicity experiments were not carried out. The train of symptoms suggests that pus formation occurred first in or near the occipital bone. It is known that the organisms of the group occasionally invade bone either metastatically or directly, producing osteomyelitis with widespread necrosis. The external abscess was found to extend down to the bone. Slight signs of intracranial involvement appeared before any swelling was detectable externally, although there was stiffness and pain at the back of the neck. The aggravation of the intracranial symptoms and the development of the external swelling proceeded more or less concurrently. Pus formed on both aspects of the occipital bone, producing an external and an extradural abscess. The earlier specimens of cerebrospinal fluid were definitely purulent but sterile, and this is not uncommonly found with suppuration close to but not involving the meninges. Such an observation would be consistent with the presence of an extradural abscess. The final infection of the meninges indicates the rupture of this abscess internally. Necropsy was not obtained and clinical examination failed to show anything definitely suggestive. It is possible that the infection originated in the mouth, but there was no clinical enlargement or tenderness in the anterior group of cervical glands.

Medical Journal of Australia, Sydney

1: 485-514 (April 14) 1934

The Anne MacKenzie Oration: Mental Disorder; Its Frequency and Causation, with Suggestions for Earlier Recognition and Treatment. W. E. Jones.—p. 485.
Broughton Hall Psychiatric Clinic: Review of Admissions During the Decade 1921-1931. S. E. Jones.—p. 493.
Eighteen Months' Experience with Transurethral Prostatic Resection. P. A. Ardagh.—p. 496.

1: 515-548 (April 21) 1934

Medicine, the State and the Public. A. J. Collins.—p. 515.
*Technic for Osteosynthesis of Fractured Neck of the Femur by the Smith-Petersen Nail. R. D. Wright.—p. 518.
Relation of Diet to Tropical Ulcer: Preliminary Report. F. W. Clements.—p. 520.
Surgical Treatment of Chronic Ulcer of the Stomach. H. C. Rutherford-Darling.—p. 522.

Osteosynthesis of Fractured Neck of Femur.—Wright employed the following method of implanting the Smith-Petersen nail in fractures of the neck of the femur: With the femur abducted, inverted and extended, and with the shortening reduced, a vertical incision is made over the trochanter and through the iliotibial band. The nail is entered 1.5 cm. below the great trochanteric ridge and aimed horizontally in a plane cutting the point of insertion and the opposite anterior superior iliac spine. An incision in the form of a couched S is used, the anterior limb lying ventral to the femur, extending 2.5 cm. (1 inch) distal to the trochanteric ridge. The anterior curve is 1.25 cm. (half an inch) above the trochanteric ridge and curves down along the back of the trochanter to 1.25 cm. below the trochanteric ridge. The dorsal limb curves cranially for from 2.5 to 5 cm. (1 to 2 inches) on to and in the direction of the fibers of the aponeurosis of the gluteus maximus. Thus the scar is removed from pressure by the greater trochanter and lies in a natural fold of skin, except anteriorly. The flap outlined by the anterior curve is reflected and gives access to the iliotibial tract covering the vastus lateralis. This is incised vertically and retracted to front and back, exposing the femur. An incision about 2.5 cm. long is made, splitting the aponeurosis of the gluteus maximus medially and posteriorly to its insertion. A finger is passed through the incision in the gluteus maximus and the tendons of the obturator internus and externus are identified. The neck of the femur is felt between these two, and by passing the finger medially along the lower border of the obturator internus tendon the dorso-inferior edge of the acetabulum is easily found and the necessary length of the nail can be measured on the finger, 1.25 cm. being allowed for the head of the femur. With the finger and thumb of one hand on the anterior and posterior aspect of the neck, that at the posterior aspect being at the lower edge of the neck, the nail can be easily entered 1.5 cm. below the trochanteric crest, pointing half way between the tips of the two digits in the horizontal axis and about 1 cm. above the tip of the posterior digit in the coronal axis. It is then driven into the bone. About 3 mm. (one-eighth inch) of the nail is left protruding. The fragments are impacted with a mallet and a cube of india rubber having a hole for the pin. The iliotibial band and gluteal aponeurosis are sutured and the skin margins are approximated. After the position of the pin has been confirmed by roentgen examination the patient is encouraged to move the limb on returning to bed. Weight bearing is allowed in about two weeks.

South African Medical Journal, Cape Town

8: 277-316 (April 28) 1934

Functional Diseases Simulating Organic Disease. C. D. Brink.—p. 279.
Native End of a Country Practice. L. E. Hertslet.—p. 282.
A Visit to Some American Clinics. I. W. Brebner.—p. 286.
Farming by a Doctor of Medicine. W. Archer-Isaac.—p. 289.
The Early History of the Ligature. G. J. Melle.—p. 290.
A Visit to Madagascar. H. Garin.—p. 292.

Chinese Medical Journal, Peiping

48: 199-322 (March) 1934

Tuberculosis of the Shaft of the Large Long Bones of the Extremities: I. Diagnosis and Treatment. C. K. Hsieh, L. J. Miltner and C. P. Chang.—p. 199.
Test Survey of Intrathoracic Tuberculosis in the Shanghai Region. H. G. Anderson.—p. 207.
Collapse Therapy: Two Years' Experience at the Chinese Red Cross First Hospital, Shanghai. T. C. Liu.—p. 221.
Blood Differential Count in the Prognosis of Tuberculosis. H. G. Anderson.—p. 228.

Japanese Journal of Obstetrics and Gynecology, Kyoto

17: 1-84 (Feb.) 1934

*Hydrogen Ion Concentration of the Umbilical Blood of the Human New-Born Collating with Its Maternal Blood. T. Mikawa.—p. 2.
Efferent Lymphatic Canals of the Ovary After Exclusion of Its Principal Lymphatic Canals. M. Nishi.—p. 10.
Experimental Study of Autotransfusion: Part II. Influence of Autotransfusion on the Production of Agglutinin of Immune Antibody: Study on the Vaccination of Immune Body in Autotransfusion T. Kubota.—p. 16.
*Effect of Spleen to Growth of Transplanted Tumor. H. Matsuoka.—p. 25.

Hydrogen Ion Concentration of the Umbilical Blood.—Mikawa studied the p_H of the arterial and venous umbilical blood, the maternal venous blood and the retroplacental blood by means of his micromethod. He observed that the mean p_H of the blood in the umbilical vein is 7.326 ± 0.011, while that in the umbilical arteries is 7.288 ± 0.006. In the asphyxiated new-born infant these two bloods become more acid, and the difference between the p_H of the two becomes more marked than in the normal case. The retroplacental blood has a higher p_H, i. e., it is more alkaline, than the venous blood of the same parturient subject taken from the cubital vein immediately after parturition. Generally, the p_H is 7.344 ± 0.008 for the former and 7.320 ± 0.007 for the latter, the latter being thus almost on the acid limit of the normal p_H range for adults or for normal pregnant women. The arterial umbilical blood running along the umbilical vein had almost the same p_H as the maternal venous blood.

Effect of Spleen on Growth of Transplanted Tumor.—The experiments of Matsuoka with rabbit sarcoma and rat cancer indicated that the spleen had a relatively marked action to inhibit the growth of these transplanted tumors. This action not only was found round the spleen as an antagonistic factor to the tumor but, by affecting the whole body, directly or indirectly inhibited the growth of the transplanted tumor in the sense that it disturbed the metabolism of carbohydrates, especially the glycolysis. The extirpation of the spleen invigorated the glycolytic power of the sarcomatous tissues. The antagonistic action of the spleen against the tumor was not so intense as not to admit the continual and nonmetastatic invasions of tumor tissues into the spleen.

Paris Médical

1: 401-412 (May 12) 1934

Vagotonin and Its Cardiovascular Therapeutic Action. G. Etienne and P. Louyot.—p. 401.
*Blood Sugar Reducing Effect of Methylene Blue in Normal Subjects and in Diabetic Patients. S. Gabrielli.—p. 406.
Recklinghausen's Disease with Multiple Osseous Lesions. P. Merklen and L. Israel.—p. 411.

Blood Sugar Reducing Effect of Methylene Blue.—Gabrielli administered 50 Gm. of dextrose by mouth together with 20 cc. of a 1 per cent solution of methylene blue to normal subjects on a fasting stomach. The glycemic curve gradually sank during a half hour after administration but rose to the maximum at the end of the first hour. Another 20 cc. of the solution of methylene blue was injected intravenously after an hour. This caused a drop in the glycemia. The minimal glycemic rate is reached by the third hour (0.4 Gm. per thousand), after which the curve rises again to the glycemic rate at fasting time. Methylene blue has a marked blood sugar reducing action; it lowers the alimentary glycemic curve, the value of which is from 40 to 50 per cent below that of control tests. In several patients who had diabetes the top of the curve exceeded 50 per cent as calculated at fasting. While the curve was not modified by the methylene blue, it rose to 75 per cent above the initial glycemic rate. The second injection interrupted this ascending phase: the values remained unchanged for about an hour, after which the curve dropped to a deficient glycemic condition. Thus the methylene blue determined a marked lowering of the entire alimentary curve. Another diabetic patient on a fasting stomach presented a glycemic rate of 1.90 per thousand and poor tolerance to alimentary dextrose. The first administration of dextrose and methylene blue raised the top of the curve slightly and the second produced a rapid decline in the rate of glycemia. By the fourth hour the rate was back to that on a fasting stomach. Thus, methylene blue is able to diminish the glycemia of diabetic patients by approximately 20 per cent for a period of more than four hours. The blood sugar reducing effect of methylene blue is in relation to the amount of the solution injected. In order to obtain favorable results, it is necessary to introduce about 3 mg. of methylene blue for each kilogram of body weight. All subjects and patients tolerated the injections well and no subjective symptoms were observed. The blood sugar reducing effect of methylene blue is probably in relation to the processes of oxydoreduction, which are characteristic of the substance. It would be interesting to verify whether methylene blue, which may accelerate oxidation of dextrose, has the power to modify acidotic conditions and different forms of diabetic coma due to these acidotic causes. The author feels that methylene blue merits further investigation.

Presse Médicale, Paris

42: 697-720 (May 2) 1934

Some Objectives of Experimental Work for Contemporary Surgery. R. Leriche.—p. 697.
Heredity of Gout. M. P. Weil.—p. 701.
Calcium and Renal Eliminations. P.-L. Violle.—p. 702.
*Treatment of Hydrocele by Injections of Double Chlorhydrolactate of Quinine and Urea. L. Blavier.—p. 705.

Treatment of Hydrocele.—Blavier treated eighteen patients having hydrocele by aspiration of the fluid and reinjection of a solution of double chlorhydrolactate of quinine and urea, 25 parts to 100 of glycerin (Vendel's solution). Cure resulted in all cases. The patients ranged in age from 32 to 73 years, and the duration of the hydrocele was from a few months to many years. It was noted that, although the sac usually refilled after the first and sometimes after subsequent injections, the fluid was more viscous and more brown than the original. The reformed fluid tended to be smaller in quantity and to diminish gradually in the course of time. The injections were entirely painless. They lead to sclerosis of the wall of the hydrocele followed by total resorption of the fluid. They are without danger, since injections outside the sac cause little trouble. From the practical standpoint the author recommends a single dose of 3 cc. of the solution in cases in which the volume of hydrocele fluid does not exceed 75 cc. If the volume is greater, 6 cc. may be injected at once without danger. Usually it is useless to repeat the injection, since one is generally sufficient to effect a cure.

Revue Française de Gynecologie et d'Obst., Paris

29: 481-658 (May) 1934

Treatment of Pelvic Deformities at Obstetric Clinic of Lyons in Course of Years 1931 and 1932. J. Voron and H. Pigeaud.—p. 481.
Retention of Membranes After Delivery. J. Wodon and R. de Guchtenere.—p. 489.
*New Clinical Sign of Folliculin Activity: Test of Breasts. G. Sauphar.—p. 496.

Congestion of Breasts as Sign of Folliculin Activity.—Sauphar states that congestion of the breasts occurs almost constantly after the injection of a known dose of folliculin. It lasts a limited time and disappears without other symptoms, having provided a striking sign of the activity of the preparation employed. He observed that the results were more constant when an ester salt of folliculin, such as the benzoate, was used in place of the crystallized folliculin. In the second part of his work a preparation of dihydrofolliculin was therefore substituted for crystallized folliculin. The author believes that the benzoate of folliculin in single injection is the most active preparation; dihydrofolliculin administered orally in divided doses and crystallized folliculin orally give more inconstant results. Eight cases are reported showing this congestion of the breasts subsequent to the administration of folliculin preparation. The author states that in forty such patients only one negative result occurred. The best results are obtained with early administration of the folliculin, since resistance apparently occurs with the passage of time. Finally he states that congestion of the breasts is a single clinical phenomenon from which no conclusions can be drawn other than the activity of the preparation introduced. The positive breast sign probably indicates dosage considerably in excess of that necessary therapeutically.

Policlinico, Rome

41: 763-802 (May 21) 1934. Practical Section

*Influence of Calcium on Platelet Content of Blood. L. Savagnone.—p. 763.
Gastric Polypus: Two Cases. T. Blefari-Mellazzi.—p. 767.
Cardiospasm, Exfoliative Esophagitis and Esophageal Diverticula. R. Memmi.—p. 770.
Diverticula of Jejunum: Case. A. Dalla Palma.—p. 775.

Influence of Calcium on Platelet Content of Blood.—Savagnone studied the quantitative modifications of the blood platelets during calcium therapy to determine whether calcium stimulates the production of fibrinogen in the blood. He administered intravenously 10 cc. of calcium gluconate daily to ten patients who had pulmonary tuberculosis. One hour after injection there was a marked increase in the number of blood platelets. This increase was temporary and within from five to six hours the number of platelets was reduced again to its normal rate. After one month of intensive intravenous treatment no permanent variations were found in any of the patients. These results agree with those of a previous investigation made by the author, in which the calcium did not permanently influence the mechanism of coagulation.

Semana Médica, Buenos Aires

41: 1489-1564 (May 17) 1934. Partial Index

Transient Infiltration of Lung. G. Sayago.—p. 1489.
Physicians Outside the Medical Field. R. Sabouraud.—p. 1495.
Talipes Equinus Due to Cicatricial Myositis Following Varicose Ulcer: Case. I. Gofii Moreno.—p. 1509.
*Intercostal Neuralgia as Symptom of Gastric Ulcer: Case. P. Giordano and M. Nicastro.—p. 1511.
Tonsillectomy in Pulmonary Tuberculosis. J. Daniel Aráoz.—p. 1515.
Inguinal Route in Surgery of Crural Hernia: Modified Ruggi-Parlavecchio Technic. M. Belchor.—p. 1517.
Connective Tissue Cells: Modified Cajal-Estable Technic. M. E. Jörg.—p. 1543.

Intercostal Neuralgia in Gastric Ulcer.—Giordano and Nicastro report a case of painful syndrome constituted by intercostal neuralgia, with repercussion either vertebral (rachialgia) or epigastric, caused by ulcer of the lesser curvature of the stomach in a patient aged 53. The physical symptoms indicated the presence of gastric ulcer, while the roentgen signs indicated only rigidity of the lesser curvature. At laparotomy an enormous ulcer of the lesser curvature was discovered. A gastrectomy, according to Poyla's technic, was performed. In order to interpret the syndrome the authors make a study of the innervation of the stomach. They say that the branches from the great sympathetic and pneumogastric nerves form in

the stomach two plexuses, one muscular and the other submucous, with motor and sensory nervous endings, respectively. The centrifugal fibers of the stomach are divided into two groups: one ascending along the vagus and phrenic nerves and the sympathetic fibers of the aortic plexus, and the other lateral, which at the level of the sixth to the ninth segments of the spinal cord connects with spinal routes carrying somatic sensibility. This fact explains the change of the visceral pain into somatic pain at that level and, since the cutaneous parietal innervation of the intercostal spaces derives from afferent routes of the sympathetic, explains the neuralgia in the authors' case. The ascending fibers of the vagus and phrenic nerves produce a cutaneous innervation corresponding to the cervical segments of the spinal cord, causing areas of hyperalgesia at the level of the face, the neck and the back, which may also explain the vertebral repercussion of the pain in the authors' case.

Archiv für Gynäkologie, Berlin

157: 1-138 (May 23) 1934

Criticism of Present Theory of Work Accomplished by Uterine Contractions and Their Measurement. F. A. Wahl.—p. 1.
*Sequels in Children Born During Tribrom-Ethanol Anesthesia. F. A. Wahl.—p. 17.
Microscopic Structure of Uterine Myomas. M. Glasunow.—p. 21.
Acute Cavernitis of Clitoris. B. Kriss.—p. 39.
*Lymphosarcomatosis of Female Genital Organs. O. Walther.—p. 44.
Histogenesis of Brenner's Ovarian Tumors. W. Schiller.—p. 65.
Multiple Atresia of Small Intestine in a New-Born Infant. Brückner.—p. 84.
Suprarenocorticotropic Hormone of Anterior Lobe of Hypophysis. K. J. Anselmino, F. Hoffmann and L. Herold.—p. 86.
Content of Pregnancy Blood in Antithyroidal Protective Substances. L. Herold.—p. 103.
Pseudo-Anemia During Pregnancy. W. Schultz.—p. 110.

Sequels in Children Born During Tribrom-Ethanol Anesthesia.—Wahl shows that, following delivery during tribrom-ethanol anesthesia, the new-born occasionally show grave disturbances. In some cases there develop without prodromal symptoms, but immediately after birth, asphyctic conditions, which in spite of numerous therapeutic measures gradually subside only after more than an hour. Nearly 50 per cent of the children who have been delivered during tribrom-ethanol anesthesia are apathic for from two to four days after birth. There is weak whimpering instead of crying, poor and awkward nursing, increased aspiration of fluids and an abnormal weight curve. Consequently, considered from the standpoint of the welfare of the child, birth during tribrom-ethanol anesthesia is not to be recommended, and it is necessary to search for better methods.

Lymphosarcomatosis of Female Genitalia.—Walther discusses six cases of lymphosarcomatosis of the female genitalia, two of which he himself observed. In five cases the tumor originated in the uterus, whereas in the other case it probably originated in the ovaries. Five tumors showed an average degree of maturity, that is, the tumor cells resembled lymphoblasts and lymphocytes, but in the sixth case the cellular polymorphism of the tumor tissues resembled the histologic structure of a retothelial sarcoma. Here the lymphatic tissue of the tumors was extremely immature. The growth of the tumor tissues from the uterus and the ovaries led first, by way of infiltration, to an involvement of the neighboring genital organs. Then developed lymphogenous metastases in the retroperitoneal lymph nodes and in the more distant groups of lymph nodes, and here and there also hematogenous metastases and implantation metastases. Spleen, liver and bone marrow never showed leukemic changes and, in the case in which the blood was examined, leukemic changes were likewise absent. A systemic leukemic disorder can thus be excluded. The starting point of the lymphosarcoma was preexisting lymphatic tissue. In the first five cases it was lymphatic tissue of the uterine mucosa, in which the occurrence of lymph follicles is a frequent occurrence. If the starting point of the tumor formation is in the ovaries, it is probable that a lymph follicle formation on an inflammatory basis was the matrix of the tumor. The clinical picture of lymphosarcomatosis of the uterus largely resembles that of carcinoma of the uterus, except that it is much more malignant, spreads more rapidly, metastasizes earlier and sooner leads to a fatal outcome than is the case in carcinoma of the uterus. Observations indicate that lymphosarcoma of the genitalia occurs in women between the ages of 45 and 65.

Deutsche medizinische Wochenschrift, Leipzig

60: 775-810 (May 25) 1934

Organized Campaign Against Diphtheria. M. Gundel and Niermann.—p. 775.
Rôle of Antitoxin in Pathogenesis, Course and Cure of Diphtheria. H. Kleinschmidt.—p. 779.
Meningitis and Sepsis with Articular Metastasis Caused by Influenza Bacteria. P. Dahr.—p. 782.
Cultural and Microscopic Investigations on So-Called Bacterium Typhi-Flavum. J. Fortner.—p. 785.
*Intravenous Vaccine Therapy in Brucella Melitensis Infections in Human Subjects. L. Bianchi.—p. 788.
Observations in Alastrium Epidemic. F. Kröber.—p. 793.
Endemic of Bacillary Dysentery in Insane Asylum of Rio de Janeiro. F. Carneiro de Mendonça.—p. 794.

Vaccine Therapy in Brucella Melitensis Infection.—Bianchi points out that widely differing therapeutic methods have been recommended for the treatment of Brucella melitensis infections. He mentions arsphenamine, acriflavine hydrochloride, colloidal metals, nonspecific protein therapy, hemotherapy, serum therapy and vaccine therapy. However, not one of these treatments has proved sufficiently successful to become generally accepted. Vaccine therapy has been tried with different types of vaccines, but the application was generally by subcutaneous or intramuscular injection, rarely by intravenous injection. Moved by Veratti's suggestion, the author commenced with systematic intravenous injections of vaccine in 1927. For the preparation of the vaccine he has followed the technic of Pfeiffer and Kolle, and he has always employed a laboratory strain derived from a human Brucella melitensis infection of several years ago. From a twenty-four hour culture, developed on ordinary or, still better, on liver agar, he prepares a suspension with an 0.85 per cent solution of sodium chloride and an addition of 0.5 per cent phenol. This suspension is sterilized by placing it for one hour in a water bath of 60 C. After that it is kept in the icebox and is renewed every four or five weeks. One loop of this stock suspension contains approximately two billion organisms. Dilutes of 1:10 are made with physiologic solution of sodium chloride and with an addition of 0.5 per cent phenol. Thus the tubes contain 1:10, 1:100, and 1:1,000 loop to 1 cc. They are likewise kept on ice and, if not used, they are renewed after about one month. The intravenous injection of a 1:1,000 dilution is usually followed from three to five hours later by a rather high fever reaction. Then, in the course of a profuse perspiration, the temperature gradually drops so as to reach after eight or ten hours the level it had before the injection. It is best to give the injection in the morning. The second injection is made from three to four days after the first either with the double dose, or, if the fever after the first reaction exceeded 40 C. (104 F.), with 1.5 times the first dose. In many cases the patient's temperature began to decrease after the second injection and in some even after the first injection, but this should not be a temptation to discontinue the treatment, for a relapse may occur. The author advises four or five additional injections with constantly increasing doses in order to produce each time a fever reaction of the same intensity. Once the fever has disappeared, the intervals between injections should be lengthened from six to eight days. The author effected rapid and complete cure in twenty cases of Brucella melitensis infection. He cites others who obtained the same favorable results and concludes that the intravenous vaccine therapy is the most effective one in Brucella melitensis infections.

Klinische Wochenschrift, Berlin

13: 753-792 (May 26) 1934

Neurohormone Regulation of Liver in Carbohydrate Metabolism. F. Meythaler.—p. 753.
Acute Dilatation of Heart. A. Meyer.—p. 758.
*Function of Gallbladder as Regulator of Enterohepatic Circulation and as Detoxicating Organ. K. Heckmann.—p. 760.
Influence of Ovary on Secretion of Thyrotropic Hormone of Hypophysis. A. Loeser.—p. 766.
Anemia and Angina Pectoris. K. Paschkis.—p. 767.
Miliary Carcinosis and Pulmonary Stasis. F. Kuhlmann.—p. 770.
Biologic Action of Short Waves. G. Izar and P. Moretti.—p. 771.
Breaking of Addiction to Narcotics. C. Amsler.—p. 773.
Saccharosuria in Pancreopathy: Case. R. Rencki and A. Falkiewicz.—p. 774.

Gallbladder as Regulator of Enterohepatic Circulation.—Heckmann discusses the part played by the enterohepatic circulation in digestion and in detoxication and the function of

the gallbladder in the enterohepatic circulation. He concludes that with the exception of cholesterol and lecithin all biliary substances take part in the enterohepatic circulation. This signifies that the cells of the liver have to replace only those quantities of bile that are lost (elimination with the feces and so on), whereas the largest portion of the biliary constituents are carried to the liver with the portal blood and merely have to be excreted into the bile passages. In case of destruction of this circulation, for instance by drainage or by Eck's fistula, there is a considerable reduction in the biliary secretion. Such a change in the enterohepatic circulation takes place also in diseases of the liver, such as cirrhosis, in which, as the result of the overflow of the enterohepatic circulation, large amounts of substances contained therein (urobilinogen and so on) enter into the greater circulation. The enterohepatic circulation acts as a protecting device in that it intercepts and isolates foreign compounds. These compounds experience the same fate as the sodium tetraiodophenolphthalein that is used for contrast filling in cholecystography. The gallbladder has the capacity to store and concentrate all the circulating bile. It acts as a regulator of the constantly circulating bile (from the liver to the intestine and back again to the liver) and its function is to adapt the circulating bile to the requirements of the digestion. Observations during cholecystography corroborate this, and connections between disorders of the gallbladder and digestive disturbances, on the one hand, and functional disturbances of the liver, on the other hand, appear understandable. Toxins that enter the organism and are eliminated through the liver become concentrated in the gallbladder. Thus the gallbladder becomes a protective device of the entire organism, but particularly of the liver; however, it itself becomes especially exposed to the poison. The author points out that the exclusion of this protective organ favors the development of hepatic disorders. He stresses that the treatment of intoxications should avoid disturbing this protective device by avoiding antidotes that produce a contraction of the gallbladder.

Medizinische Klinik, Berlin

30: 725-756 (June 1) 1934. Partial Index

Chemical Exclusion of Surgically Exposed Peripheral Vascular Sympathetic (Sympathicodiaphtheresis) and its Indications. K. Doppler.—p. 730.
Application of Roentgen Rays in Skin Diseases Near the Eyes. K. Hoede.—p. 734.
*Modification of Threshold of Temperature Perception by Phisicotherapeutic Influences. L. Isler and J. Schneyer.—p. 736.
*Reducing Treatment of Atypical Forms of Thyrosexual Insufficiency. G. Stark.—p. 737.
Endoscopy of Rectum and Sigmoid with New Method of Unfolding Organ. J. Goldberger.—p. 738.

Modification of Threshold of Temperature Perception.—Thinking that the determination of the threshold for temperature perception has not been sufficiently utilized clinically, Isler and Schneyer decided to find out whether the various forms of physical therapy change the threshold for temperature perception. They made 217 tests with many types of treatment, such as unilateral hot baths of the forearm, local application of hot air, the light cabinet, cold baths of the forearm, carbon dioxide baths, galvanic current, faradic current, high frequency apparatus, short waves, ultraviolet rays, diathermy, and histamine iontophoresis. They describe the results obtained with each of these treatments and in summarizing their observations they distinguish three groups: 1. Persons who had been subjected to treatment with the high frequency apparatus, the short wave tube apparatus, the faradic or galvanic current, the quartz lamp, histamine iontophoresis and epinephrine iontophoresis generally showed a reduction of the threshold for heat perception, and in many instances also an elevation of the threshold for the perception of cold. In these methods of treatment, with the exception of the faradic current, the change of the threshold of stimulation was noticeable also on the side that had not been treated. 2. In persons in whom the various forms of hot applications (hot baths, hot air and light) usually resulted in an elevation of the threshold for heat and cold, the change usually being limited to the side that had been treated. The cold baths of one forearm likewise heightened the threshold for the perception of both qualities of temperature. However, in contradistinction to the hot baths, the change was noticeable on both sides. 3. In persons in whom the changes varied after diathermy, carbon dioxide baths or spark gap short waves, an increase of the threshold was about as frequent as a decrease. Thus the experiments proved that the majority of persons react uniformly to many forms of physical therapy. The fact that not all persons react in the same manner may be due to individual characteristics or to disease. On the basis of observations on normal persons, the authors are inclined to assume the first possibility.

Reducing in Atypical Forms of Thyrosexual Insufficiency.—Stark is convinced that the obesities caused only by insufficiency of the thyroid or by dysfunction of the ovaries are rare. He calls attention to the so-called thyrosexual insufficiency described by Borchardt, which is the result of the simultaneous dysfunction of the thyroid and the gonads. The main symptoms are fatigue, aversion to exertion, falling out of the hair and frequently cessation of menstruation. The author has the impression that most of the cases of endocrine obesity that came under his observation were atypical forms of thyrosexual insufficiency. Since the two endocrine components (thyroid and ovarian) are involved in varying intensity, the symptomatology is not quite as typical as that described by Borchardt. The diagnosis should aim to determine the predominance of one or the other endocrine factor, and the author thinks that the treatment can do this. He admits that this is not always easy, since nearly all forms of obesity react to thyroid preparations. However, if the efficacy of the thyroid preparations can be improved by ovarian preparations, a strong ovarian component may be assumed. The reaction of the patient to measures of dehydration likewise is a valuable aid in the diagnosis, in that it may reveal the presence of a myxedema-like water retention and thus indicate a predominating thyroid component. The polyglandular genesis of the atypical forms of thyrosexual obesity makes it necessary that the treatment should aim not only to reduce the weight but also to stimulate the insufficient glandular action.

Münchener medizinische Wochenschrift, Munich

81: 817-852 (June 1) 1934. Partial Index

*Theory and Practice of Glycerin Therapy in Renal and Ureteral Calculi. F. Lickint.—p. 821.
*Active and Conservative Treatment of Puerperal Hemorrhages. H. Siedentopf.—p. 828.
Appendicitis During Delivery. F. Krauss.—p. 830.
Treatment of Schizophrenia. O. Magenau.—p. 831.
*Mechanotherapy of Inflammatory Swelling of Liver. F. Stolle.—p. 833.
New Intravenous Method in Obstetrics with Aid of Injection Apparatus and an Arm Support. G. von Bud.—p. 833.

Glycerin Therapy of Renal and Ureteral Calculi.—Lickint points out that the great increase in the incidence of renal and ureteral calculi has augmented the demand for conservative remedies. After evaluating ureteral massage, dilation of the ureters, increased flooding of the urinary passages by the administration of large amounts of fluid, hypophyseal preparations for the stimulation of peristalsis, and the use of volatile oils, the author discusses the part of glycerin in normal metabolism, the elimination of glycerin following its administration and its mode of action in expelling calculi. He calls attention to its spasmolytic action, its stimulating effect on the peristalsis by withdrawal of water or by reflex action from the intestine to the ureters, its diuretic action, its lubricating action, the increased density and viscosity of the urine, and the facilitation of expulsion by dissolving and diminishing the calculi. The author points out that small doses will result in failure, and he advises the giving of 50 cc. of glycerin three times daily for three successive days. He never observed undesirable effects after the administration of glycerin. He obtained expulsion of the stone in fourteen out of sixteen patients to whom he gave the dose mentioned.

Treatment of Puerperal Hemorrhages.—Siedentopf points out that the treatment of postoperative hemorrhages should as much as possible consider the causes of the puerperal hemorrhages but that this is often difficult. Profuse and sudden hemorrhages generally indicate the presence of a placental remnant, but other factors may likewise cause severe hemorrhages. Exploration and curettage would reveal the cause, but this measure is already a decisive step in the choice between

the active and conservative treatment and is therefore unsuitable as a purely diagnostic aid. Consequently it is generally necessary to decide on a definite therapeutic method without exact knowledge of the cause. Some gynecologists prefer the conservative method, while others advise active measures not only on the basis of anatomic considerations but also because the duration of the treatment can often be reduced. To evaluate the two methods, the author compared the results in 110 cases of conservative treatment with those in fifty-five cases of active treatment. The conservative therapy proved successful in seventy-seven cases and the active therapy in twenty-seven. He relates one case in which the active treatment effected rapid improvement. If the woman can be kept in fairly good general condition for several weeks, the conservative treatment may be considered successful, for approximately eight weeks after the delivery an intra-uterine intervention has lost its danger, and curettage can then be resorted to in order to effect a complete arrest of the treatment. The conservative therapy is a complete failure only if an active method becomes necessary before the dangerous period is over. The author gives a tabular report of the 165 cases. This table shows that of the 110 women who underwent conservative treatment only one died as the result of sepsis, while of the fifty-five who were actively treated five died of sepsis. Fever was more frequent in the actively treated cases (thirteen compared to seven). He concludes that his preference for the conservative treatment of puerperal hemorrhages is justified.

Mechanotherapy of Inflammatory Swelling of Liver.—Stolle relates that in two patients with inflammatory swelling of the liver he obtained prompt reduction of the extreme pain by the use of elastic traction. He applied a strip of elastic adhesive bandage, 8 cm. wide, so that, beginning in the median line of the back, it reached in the back approximately 2 cm. below the border of the liver, and then, while the liver was being lifted, the bandage was brought with slight traction to the front and over the median line. A second strip covering one third of the width of the first one strengthened and secured the compressing and lifting action. Immediately following application of this bandage, the patients felt relieved. Because of the reduction in the swelling of the liver, the bandage became somewhat slack and was twice replaced by a new one. Each time the patients felt relieved. This mechanical treatment was supported by a suitable dietary therapy, which supplied comparatively large amounts of carbohydrates, particularly dextrose, and curtailed the intake of proteins; and by medicinal treatment in the form of magnesium sulphate, medical charcoal and occasionally methenamine.

Wiener klinische Wochenschrift, Vienna

47: 673-704 (June 1) 1934. Partial Index

*Increase in Sugar Content of Blood Following Thoracoplasty in Patients with Phthisis. O. Scharff.—p. 675.
Monstrous Foreign Body in Rectum Removed by Kraske's Operation. F. Höllrigl.—p. 679.
Therapy of Nutritive-Allergic Disorders. K. P. Eiselberg and F. Kauders.—p. 679.
*Roentgen Therapy of Hyperthyroidism. P. Petrás.—p. 681.

Increase in Sugar in Blood Following Thoracoplasty.—Scharff reviews the literature and relates his observations made on thirteen patients after fifteen interventions. With the exception of two cases, all the operations were done under local anesthesia. The sugar content of the blood was determined before and after the operation, and a postoperative increase was observed in all instances. At the peak of the hyperglycemia, a temporary glycosuria was noted frequently. Acetone and aceto-acetic acid were not demonstrable in the urine. Severe disturbances, such as decompensated acidosis, were absent, but there was a parallelism between the metabolic disorders and the general condition.

Roentgen Therapy of Hyperthyroidism.—Petrás employed roentgen rays in the treatment of forty-two cases of hyperthyroidism. He uses rays of medium hardness, which are filtered through 0.5 mm. of zinc and 1 mm. of aluminum. The tension is 160 kilovolts. The therapy is applied in series of three treatments. The intervals between the treatments last eight days and between the series from six weeks to several months. It is advisable to commence the first series with small doses of from 60 to 90 roentgens at each session. During the second series, from 120 to 180 roentgens may be administered at each session. The author observed favorable effects in two thirds of the cases. He admits that the result is not as prompt as after surgical treatment but points out that the irradiation avoids the operative mortality, which averages from 2 to 8 per cent. During roentgen therapy the symptoms disappear more gradually. The improvement becomes noticeable particularly in the disappearance of the nervous symptoms. Tremor and insomnia disappear, the appetite improves, and the diarrhea ceases. There is also improvement in the cardiovascular syndrome, but its complete disappearance requires considerable time. The ocular symptoms are still more refractory, for many patients who have regained their working capacity still have a considerable exophthalmos and Graefe's sign. The weight of the patients increases considerably, but the basal metabolic rate decreases slowly. The author concludes that roentgen therapy of exophthalmic goiter deserves a place beside the surgical treatment.

Zeitschrift für klinische Medizin, Berlin

127: 1-110 (May 24) 1934

Influence of Organic Substances on Blood Pressure in Human Subjects. H. J. Wolf and H.-A. Heinsen.—p. 1.
Venous Pressure, Vital Capacity of Lung and Minute Volume of Heart in Healthy Persons and in Patients with Heart Disease in Rest and in Circulatory Exertion. G. Budelmann.—p. 15.
*Copper-Iron Therapy in Anemias of Adults. K. Machold.—p. 27.
Clinical and Experimental Studies on Electrocardiogram: Influence of Warmth, Cold and Dilatation of One Side of Heart on Electrocardiogram. A. Weber and H. Baumann.—p. 41.
Id.: Changes in Electrocardiogram in Constant Overexertion of One Ventricle. A. Weber.—p. 46.
Id.: Method of Conduction of Excitation in Ventricle. B. Haager and A. Weber.—p. 51.
*Causes of Renal Insufficiency in Nephritis, with Especial Consideration of Intra-Infectious and Postinfectious Glomerular Nephritis and Nephrosclerosis. H. Kutschera-Aichbergen.—p. 57.
Block Between Two Auricles. D. Scherf and H. Siedek.—p. 77.
Blood Sugar Content and Gastric Activity. S. Okada, S. Aoyama and A. Sugita.—p. 89.
Cerebral Genesis of Exophthalmic Goiter. E. Risak.—p. 96.

Copper-Iron Therapy in Anemia of Adults.—Machold relates his experiences with an iron-copper preparation. It was administered in the form of candies, each of which contained 0.1 Gm. of ferrous chloride, 2.5 mg. of copper in the form of lactate of copper and liver and stomach extract as base. The average daily dose was ten candies, so that the patient received daily 1 Gm. of iron, 25 mg. of copper and about 1 Gm. of liver and stomach extract. The author is convinced that the efficacy of the preparation is not due to this small amount of liver and stomach extracts, but he ascribes it to the iron and copper content. He employed the candies in the treatment of posthemorrhagic anemias and found that the combined iron and copper therapy is superior to the ordinary iron therapy and that its stimulating effect on the bone marrow is superior to that of liver therapy. In anemia of infectious origin, in which the erythropoiesis was impaired, the stimulating effect of the copper and iron therapy again proved superior to that of liver therapy. Toxic impairment of the erythropoiesis responded better to the copper-iron therapy than to treatment with liver and arsenic. In hypochromic anemia after intestinal tuberculosis the combined copper-iron therapy proved as effective as a tenfold iron dose. In fact, the copper-iron therapy proved superior in all forms of anemia generally designated as secondary. The observations in cases of pernicious anemia are not sufficiently numerous to justify a definite evaluation, but promising results of the copper-iron therapy were noted in some instances, particularly in those not yet too far advanced.

Renal Insufficiency in Nephritis.—Kutschera-Aichbergen distinguishes two forms of nephritis, the intra-infectious and the postinfectious. The first form is due to a direct bacterial impairment of the renal tissues, while circulatory disturbances predominate in the second form. In intra-infectious nephritis there is never an acute renal insufficiency during the acute stage, and during the chronic stage only when most of the glomeruli are closed by "finely granular emboli." In postinfectious nephritis (hypertension nephritis), insufficiency may develop during the acute as well as the chronic stage. The characteristic sign of hypertension nephritis is the reduction of the water elimination. This disturbance is not so much the

result of inflammation as of an insufficient blood perfusion of the glomeruli. In chronic hypertension nephritis, two different forms of renal insufficiency should be differentiated: (1) cases in which there are severe morphologic changes; (2) cases in which there are relatively slight lesions of the renal parenchyma. In the latter group a functional factor is responsible, especially a disturbance of the renal circulation. There is a causal connection between the functional and the organic changes of hypertension nephritis, and the therapy should therefore make efforts to overcome the functional circulatory disturbances, as long as the organic changes have not progressed too far. A comparison of the different manifestations of insufficiency with the morphologic changes in the various renal elements permits the following conclusions about the physiology of the human kidney, which corroborate and supplement Volhard's theory: 1. The water elimination takes place primarily through the glomeruli. If they do not function, their activity may be taken over, although insufficiently, by the main portion of the uriniferous tubules. 2. The concentration of the urine is due to the secretory function of the epithelium of the main portions of the tubules. In addition to this, a reabsorption of water by Henle's loops has to be considered.

Zentralblatt für Gynäkologie, Leipzig

58: 1265-1328 (June 2) 1934. Partial Index

Newer Observations on Peculiarities of Venous Blood of Pregnant Women. W. Michaelis.—p. 1270.
*Anuria and Oliguria in Eclampsia and Their Relation to Blood Pressure. F. Spickmann.—p. 1272.
Athetosis in a New-Born Infant. J. Beaufays.—p. 1279.
Torsion of Hydatid of Morgagni (Parovarian Cyst). F. Caesar.—p. 1282.

Anuria and Oliguria in Eclampsia.—Spickmann maintains that oliguria is a frequent occurrence in the course of eclampsia. It is usually accompanied by a temporary decrease in the blood pressure, but, as soon as the diuresis improves, the blood pressure increases and then returns to the normal level in a few days. Oliguria is especially frequent immediately after delivery. The prognosis is favorable. Complete anuria occurs less often during the puerperium. In mild cases of short duration, the anuria is likewise accompanied by a temporary decrease in blood pressure, but in the majority of cases the blood pressure increases noticeably with the onset of anuria and remains constantly increased. In other cases again, the anuria is accompanied by an especially low blood pressure, which indicates progressive cardiac insufficiency. Generally the anuria begins later during the puerperium than does the oliguria. The prognosis of anuria is unfavorable. The author states that some cases of oliguria react to diuretics of the group of purine bodies with increased diuresis. However, this increase in the diuresis cannot be interpreted as indicating a favorable outcome. Diuretics fail in severe cases of anuria. Moreover, some diuretics of the group of purine bodies involve a certain danger, since their stimulating effect on the central nervous system may provoke eclamptic attacks.

Maandschrift voor Kindergeneeskunde, Leyden

3: 343-382 (June) 1934

Intestinal Infantilism with Chronic Pulmonary Infection: Case. G. J. Huet.—p. 343.
Rare Hemorrhagic Diathesis: Acute Hemorrhagic Edematous and Sporadic Hemophilia. S. Van Creveld.—p. 351.
*Practical Micromethod for Determination of Erythrocyte Sedimentation Speed. M. J. Deinum.—p. 367.
Erythema Nodosum. J. C. Schippers.—p. 371.
Abdominal Pain Syndrome in Youth. H. Reerink.—p. 378.
Difficulties in Removal of Safety Pin from Esophagus. H. W. Hondelink-Van Voorthuijsen.—p. 381.

Micromethod in Determining Erythrocyte Sedimentation Speed.—Deinum uses a capillary tube 12 cm. in length and 1.5 mm. in diameter, in which he aspirates 2 cc. of a 4.5 per cent solution of sodium citrate. A drop of blood from the finger is sucked in the tube until the column is 10 cm. long. The tube is first held perpendicularly and then at a slant. As soon as the column reaches mark 10, the contents are poured out in a watch glass and the blood and citrate are thoroughly mixed. After this the tube is filled up again to mark 5 and one end of the tube is sealed with petrolatum or with a small flame. The tube is placed in a holder: it must be held vertical, since the slightest inclination diminishes the sedimentation speed. The tube is left standing so that the erythrocytes may settle. After an hour the length of the clear column above the settled erythrocytes is read by means of a ruler made of a strip of millimeter paper. The average value attained by this method in normal children is 6 mm., although 8 mm. is still considered normal. The capillary method gives higher results than the methods of Eldahl and Langer for greater sedimentation speed. The method was used especially in cases of tuberculosis. In children in whom the temperature had disappeared and in whom the general examination was satisfactory there was at the same time a decline in the erythrocyte sedimentation speed. If the speed has not diminished, this constitutes a warning to distrust the apparent improvement. In a patient presenting rectal hyperthermia with a temperature of 98.6 F. as the only symptom, the normal value of 6 mm. of the erythrocyte sedimentation speed confirmed the diagnosis. The author states in conclusion that this method is to be recommended for its simplicity and reliability.

Bibliotek for Læger, Copenhagen

126: 187-234 (May) 1934

Evipan Sodium Anesthesia: Review. Orla Vadsten and H. Jørgensen.—p. 187.
*Investigations on Blood Sugar Regulation in Chronic Alcoholism and in Epilepsy. C. Maarssø.—p. 214.

Blood Sugar in Chronic Alcoholism and in Epilepsy.—In dextrose tests in twenty-two cases of chronic alcoholism and no other diseases known to affect the blood sugar regulation, Maarssø found pathologically heightened curves (more than 210 mg. per hundred cubic centimeters) of normal width in five cases, in one case protracted curves of normal height, and in four cases curves reaching the extreme limit of the normal top. Numerous attacks in one of the latter cases were interpreted as spontaneous hypoglycemia. In dextrose tests, three chronic alcoholic patients with epilepsy presented curves either too high or too protracted, or both, while three epileptic nonalcoholic patients showed nothing definitely abnormal.

Finska Läkaresällskapets Handlingar, Helsingfors

76: 291-408 (April) 1934

Experiences in Treatment of Pulmonary Tuberculosis by Thoracoplasty. R. C. Öhman.—p. 291.
*Liver Therapy in Granulocytopenia. B. von Bonsdorff.—p. 317.
Disturbances Due to Meckel's Diverticulum: Clinical Study of Thirty-Three Cases. O. Utter.—p. 349.

Liver Therapy in Granulocytopenia.—On the basis of his results with energetic parenteral liver treatment in two grave cases of granulocytopenia with recovery, reported in detail, von Bonsdorff is inclined to see in this procedure a valuable adjuvant in treatment of the disturbance. Spontaneous recovery in the cases is regarded as extremely improbable.

Hospitalstidende, Copenhagen

77: 521-564 (May 8) 1934

Treatment of Prostatic Hypertrophy by Electrocoagulation. C. Pernin.—p. 521.
Indications for Operative Treatment of Gastric and Duodenal Ulcer. A. Nielsen.—p. 542.
Application of Ethyl Aminobenzoate in Form of Lozenges as Palliative Agent in Painful Disturbances in Oral Cavity and Throat. K. Schroeder.—p. 556.

77: 565-592 (May 15) 1934

Alpha-Dinitrophenol: Its Mode of Action and Toxic Effect. K. Møller.—p. 565.
Combination of Leukosis and Sarcoma in Chickens. A. R. Meyer.—p. 579.
*Spontaneous Bilateral Pneumothorax: Case. T. Geill.—p. 587.

Spontaneous Bilateral Pneumothorax.—In Geill's patient, a boy aged 14, having bronchial asthma and pulmonary emphysema, spontaneous pneumothorax on the left side and immediately afterward on the right developed more than a year after the complete disappearance of an earlier spontaneous pneumothorax on the right side following grave attacks of asthma. There were pronounced cyanosis and dyspnea. Improvement occurred on aspiration of air from the left pleural space. In two months the pneumothorax was wholly resorbed on both sides and after examination nine months later showed no sign of recurrence.